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KENYA COLONY AND PROTECTORATE



MEDICAL DEPARTMENT  
ANNUAL REPORT  
1934

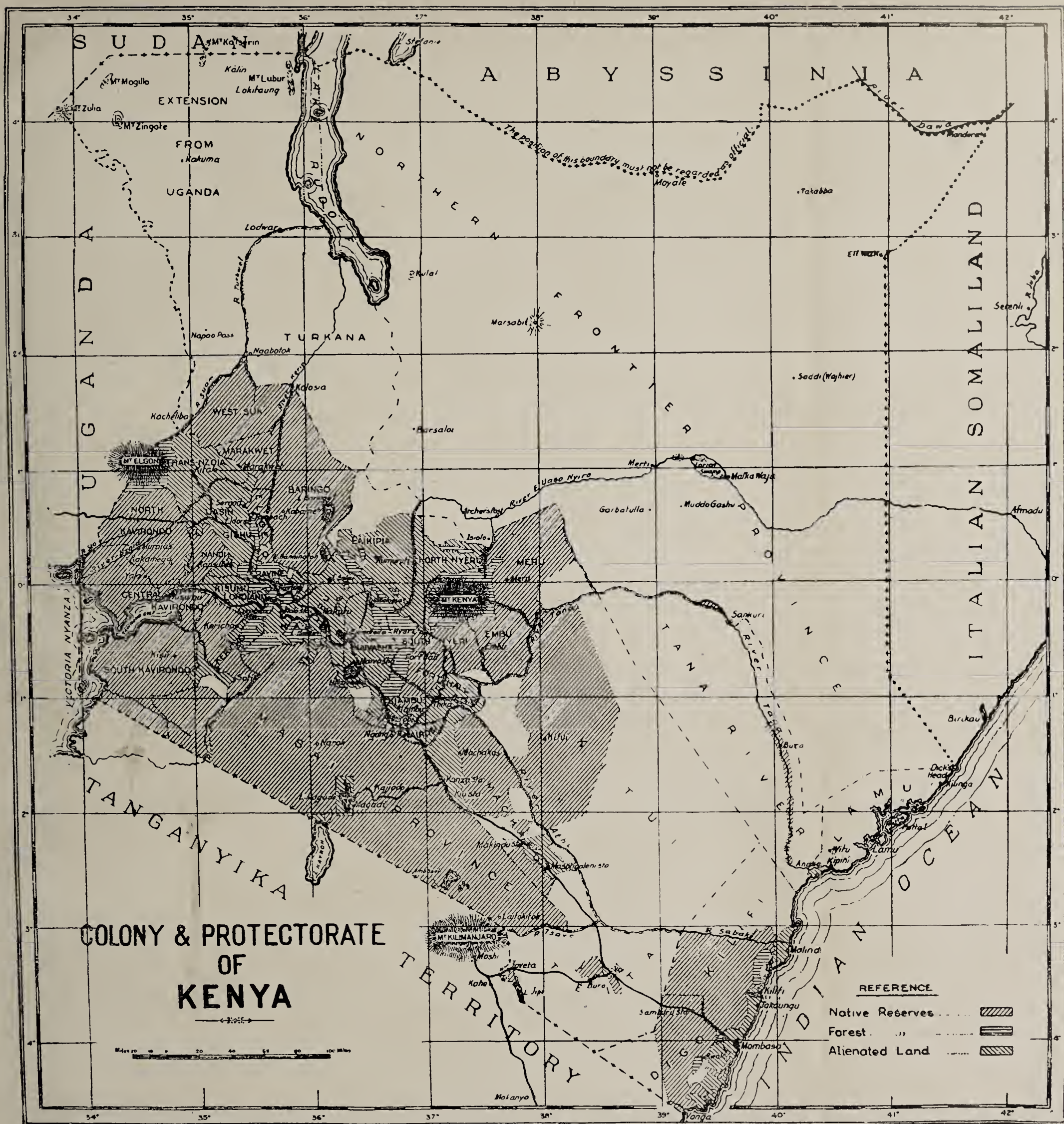
INCLUDING THE  
MEDICAL RESEARCH LABORATORY  
ANNUAL REPORT 1934

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# CONTENTS

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	PAGE
MAP OF KENYA COLONY AND PROTECTORATE .. .. .	i
SECTION I. ADMINISTRATION .. .. .	1
Staff Changes during the Year .. .. .	2
Financial .. .. .	3
SECTION II. PUBLIC HEALTH .. .. .	3
Diagram showing General Systemic and Preventable Diseases .. .. .	4
Diagram showing Infectious Diseases .. .. .	5
(i) General Diseases : .. .. .	3
(a) With regard to the Native African Population .. .. .	3
(b) With regard to Asians .. .. .	8
(c) With regard to Europeans .. .. .	9
(ii) Communicable Diseases : .. .. .	9
<i>Mosquito or Insect Borne :</i>	
Malaria .. .. .	9
Blackwater .. .. .	10
Plague .. .. .	10
Trypanosomiasis .. .. .	10
Typhus .. .. .	10
<i>Infectious Diseases :</i>	
Pneumonia .. .. .	10
Small-pox .. .. .	11
Syphilis .. .. .	12
Yaws .. .. .	12
Tuberculosis .. .. .	13
Leprosy .. .. .	13
Enteric .. .. .	14
Dysentery .. .. .	14
Diphtheria .. .. .	14
Cerebro-spinal Fever .. .. .	14
Anthrax .. .. .	14
Undulant Fever .. .. .	14
Helminthic Diseases.. .. .	14
VITAL STATISTICS: .. .. .	14
Estimated Population .. .. .	14
Registration of Births and Deaths .. .. .	14
Table showing Sick, Invaliding and Death Rates of European and Non-European Officials during the last Three Years .. .. .	15
SECTION III. HYGIENE AND SANITATION .. .. .	15
A. General Review of Work Done and Progress Made .. .. .	15
(1) Preventive Measures: .. .. .	15
<i>Mosquito and Insect Borne Diseases :</i>	
Malaria .. .. .	15
Trypanosomiasis .. .. .	16
<i>Epidemic Diseases :</i>	
Plague .. .. .	16
Small-pox .. .. .	16
Dysentery and Enteric Fevers .. .. .	17
Tuberculosis .. .. .	17
Helminthic Diseases .. .. .	17
(2) General Measures of Sanitation .. .. .	17
(3) School Hygiene .. .. .	17
(4) Labour Conditions .. .. .	17
(5) Housing and Town Planning .. .. .	17
(6) Food in relation to Health and Disease: .. .. .	17
Inspection and Control .. .. .	17
Markets, Dairies and Slaughter Houses .. .. .	17
Food Supplies .. .. .	18
B. Measures Taken to Spread the Knowledge of Hygiene and Sanitation.. .. .	18
C. Training of Sanitary Personnel .. .. .	18
D. Recommendations for Future Work .. .. .	18

SECTION IV. PORT HEALTH WORK AND ADMINISTRATION .. ..	20
SECTION V. MATERNITY AND CHILD WELFARE .. ..	21
SECTION VI. HOSPITALS, DISPENSARIES, OUT-DISPENSARIES, VENE- REAL CLINICS, THE MENTAL HOSPITAL, MEDICAL WORK CARRIED OUT BY MISSIONARY SOCIETIES, ETC. .. ..	23
Table of In- and Out-patients Treated at Government Hospitals, Dispen- saries and Out-Dispensaries :	
In Townships .. ..	23
In Turkana, Northern Frontier Province and Lamu .. ..	24
In Native Reserves .. ..	24
Surgery .. ..	25
Anæsthetics .. ..	26
Training of Africans .. ..	27
Venereal Clinics .. ..	28
Mathari Mental Hospital .. ..	29
Medical Work Carried Out by Missionary Societies.. ..	31
SECTION VII. PRISONS AND ASYLUMS .. ..	31
SECTION VIII. METEOROLOGY .. ..	33
RETURNS. TABLE I. Staff .. ..	34
TABLE II. Financial .. ..	34
TABLE III. Return of Statistics of Population .. ..	36
TABLE IV. Meteorological Returns .. ..	36
TABLE V. Return of Diseases (In-patients) .. ..	38
TABLE VI. Return of Diseases (Out-patients) .. ..	54

MEDICAL DEPARTMENT HEAD OFFICES,

NAIROBI.

15th August, 1935.

SIR,

I have the honour to submit for the information of His Excellency the Governor, and for transmission to the Right Honourable the Secretary of State, the Medical Report on the Health and Sanitary Conditions of the Colony and Protectorate of Kenya for the year 1934, together with the Returns, etc., appended thereto.

I have the honour to be,

Sir,

Your obedient servant,

A. R. PATERSON,

*Director of Medical Services.*

*The Honourable The Colonial Secretary,*

*Nairobi.*



# MEDICAL DEPARTMENT ANNUAL REPORT 1934

## I.—ADMINISTRATION.

During the year 1934 no changes were made in the system of public health administration of the Colony, while, as regards Departmental Administration, the system which pertained was that which was brought into operation in 1933, and described in detail in the Report for that year. This system under which the Department is no longer divided into a Medical and a Sanitation Division has beyond doubt added greatly to the efficiency of the Department.

Nevertheless Departmental Administration has not been easy, since no reorganization of the Department however excellent in itself could compensate the difficulties which inevitably presented themselves in 1934, as a result of financial restrictions involving still further depletion of a staff and financial provision which for some years had already been so exiguous that under no system of administration could all the work which should be undertaken be even attempted.

The sanctioned estimates for 1934 were £201,286 as compared with £215,116 for 1933, and involved therefore a reduction in sanctioned expenditure of £13,830.

This reduction was achieved partly by reductions in personnel and partly by the further reduction of the provision for what may be termed the ordinary working expenses of the Department.

The reductions in personnel were as follows :—

Clerks (Non-Europeans)	...	...	2
Sanitary Inspectors	...	...	2

These reductions in personnel and in general financial provision were not, however, accompanied by a lessening in the demand either for indoor, or outdoor medical relief. On the contrary, these demands continued to increase, and to an extent at least they were met. The position which pertained is indicated to some extent in the following table :—

Year	Sanctioned Estimates	Actual Expenditure	Qualified Medical Staff	European		Asiatic and African		Out-dispensary Patients
				In-patients	Out-patients	In-patients	Out-patients	
	£	£						
1930	250,834	236,934	72	2,956	2,272	35,691	220,953	—
1931	252,061	221,202	66	2,626	1,777	35,551	252,610	534,709
1932	219,357	197,260	54	2,375	1,595	31,382	261,795	646,033
1933	215,116	199,568	55	2,182	1,327	36,443	300,277	774,302
1934	201,286	197,967	52	2,271	1,264	42,938	331,979	851,370

From this table it will be seen that not only has the number of qualified medical staff been reduced from 72 to 52 in the course of five years, but that the total number of patients treated has risen from 827,273 to 1,229,822 in four years, and that, though the bulk of this increase has taken place in out-dispensary patients, nevertheless there has been an increase of hospital out-patients and of in-patients of no less than 31,000 and 6,000 respectively, while during the past five years it may be noted the provision for expenditure on medical stores, i.e. drugs, dressings, and hospital equipment, has fallen by over £6,000. That departmental administration in respect of medical relief at least cannot have been easier of accomplishment in 1934 than in 1933, these figures make very clear. But since they have regard only to the number of patients treated and not to the type of hospital case, there is a

point of importance which is not brought out by the figures. This point, however, is of first class importance, for whereas ten years ago it was difficult to get Africans to come into hospital, and exceedingly difficult to get them to submit to surgical treatment, and our hospitals so far as they were occupied were occupied largely by cases of a minor order of urgency and severity, to-day our beds are occupied by heavy cases and surgical treatment for difficult gynaeological conditions such, say, as vesico vaginal fistula is not only popular, but popular to a degree and sought after to the point at which most of our large hospitals at least have now waiting lists.

The administration problem even in the out district hospitals has, as a consequence, become acute, and both doctors and nursing sisters are faced with an amount of work which is in the case of the latter at least, taxing their powers of physical endurance almost to the breaking point. In addition we have had both an unusual number of staff casualties and an "epidemic emergency" of unusual importance in the form of a very severe outbreak of smallpox.

This latter emergency entailed the secondment of a medical officer for the greater part of the year for special duty, and this occurrence, together with unusual casualties from sickness rendered it impossible to maintain the full sanctioned staff in all posts throughout the year.

In theory a staff of fifty-two Medical Officers should allow of all full sanctioned posts being maintained. In practice in 1934 it was impossible to do so, and as a result the districts of Digo, Kiambu, and the township of Kisumu were each short of a medical officer for six months throughout the year. Medical Headquarters was short of a Senior Medical Officer for four months, while on occasion it was necessary to carry on the Laboratory with only one Bacteriologist.

I cannot conclude this section of this Report without expressing my very great appreciation of the fashion in which the staff of the Department as a whole whether African, Asiatic or European, has carried out its duties during a most difficult year. Where all have been on the whole so excellent it might be invidious to make distinctions, but I am sure that all medical officers, and, if they should read this report, all African Hospital Assistants and Dressers, would like to join with me in paying a special tribute to the work of the European Nursing Sisters who in our overcrowded and never too convenient Native Hospitals have known but few hours when they were not on duty.

#### STAFF CHANGES DURING THE YEAR.

The following reductions in staff took place during the year :—

Clerks, Asian	...	...	...	...	...	2
Sanitary Inspectors	...	...	...	...	...	2

The following are the principal appointments, promotions and changes made during the year :—

- (1) Dr. J. C. J. Callanan to be Senior Medical Officer, 16-1-34.
- (2) Dr. C. V. Braimbridge to be Surgical Specialist, 1-1-34.

#### *Resignations.*

Nursing Sisters	...	...	...	...	3
Clerks—European	...	...	...	...	1

#### *Retirements.*

Senior Medical Officer	...	...	...	1
Matron, European Hospital	...	...	...	1
Asian Clerk	...	...	...	1

#### *Invalidings.*

Medical Officers	...	...	...	1
Nursing Sisters	...	...	...	1

*Appointments Terminated.*

Sanitary Inspectors	...	...	...	...	2
Asian Clerk	...	...	...	...	1

*Transfers.*

Medical Officers (one to Hongkong, one to Zanzibar)	...	...	...	...	2
Nursing Sisters (to Nigeria)	...	...	...	...	1

## LEGISLATION.

No Ordinances primarily affecting the public health were enacted during the year.

## FINANCIAL.

The total of the sanctioned estimates for the Medical Department for the year 1934 was £201,876, a decrease of £13,290 on the previous year, and the actual expenditure during the year amounted to £198,615, viz. £3,216 below the sanctioned estimates.

The comparative table of the sanctioned estimates and expenditure of the Medical Department for the past three years is as follows:—

YEAR	Sanctioned Estimates	Sanctioned Extraordinary Estimates	Total Sanctioned	Actual Recurrent Expenditure	Actual Extraordinary Expenditure
	£	£	£	£	£
1932 ..	219,357	400	219,757	197,260	393
1933 ..	215,116	50	215,166	199,568	50
1934 ..	201,286	590	201,876	197,967	648

The revenue collected amounted to £18,520 against £17,597 in 1933.

Of the total estimated expenditure in 1934 of £3,188,041 for the Colony and Protectorate, £201,876 represented expenditure on Public Health and Medical Relief, a ratio of 1 to 15.79 or 6.33 per cent.

Detailed returns of the Revenue and Expenditure are given in Table II at the end of the Report.

**II.—PUBLIC HEALTH.****(I) GENERAL DISEASES.****(a) WITH REGARD TO THE NATIVE AFRICAN POPULATION.**

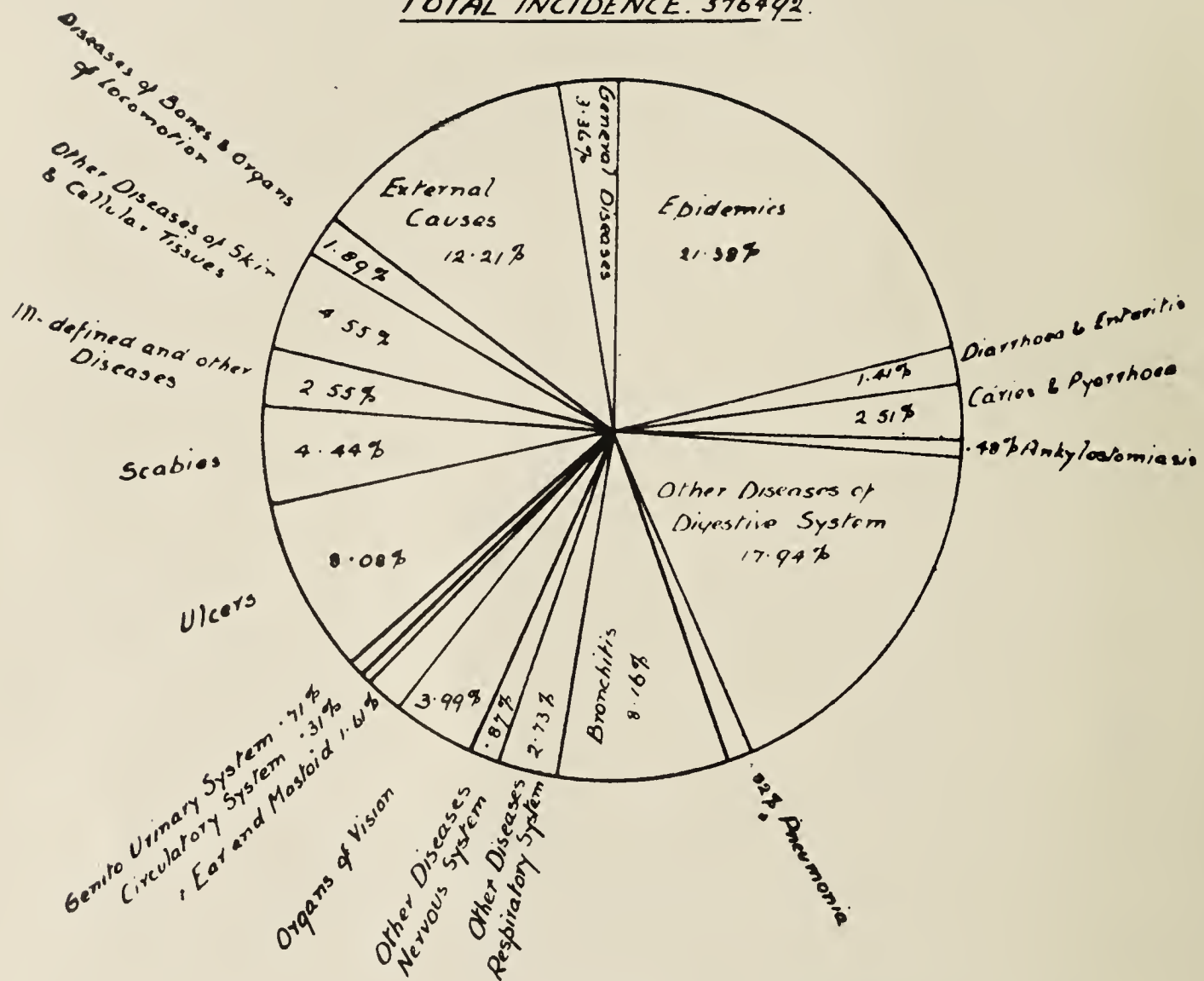
In the Annual Medical Report for the year 1933 arguing from certain detailed information which had been collected with regard to the health of two important tribes in Kenya, the coastal Digo and the highland Masai, and from such general information as was available, I indicated that but one conclusion could be arrived at with regard to the state of the public health of the native inhabitants of the coast and highlands of Kenya, namely, that the general standard of health among these peoples was poor.

The comparison, however, it may be well to note, was with the general standard of health which prevails in England, and not with any which might prevail elsewhere in Africa, for the information which is available with regard to the native populations of Africa is not such as might suggest that, taken as a whole, the standard of health among these populations is better than that which prevails among the native inhabitants of this Colony.

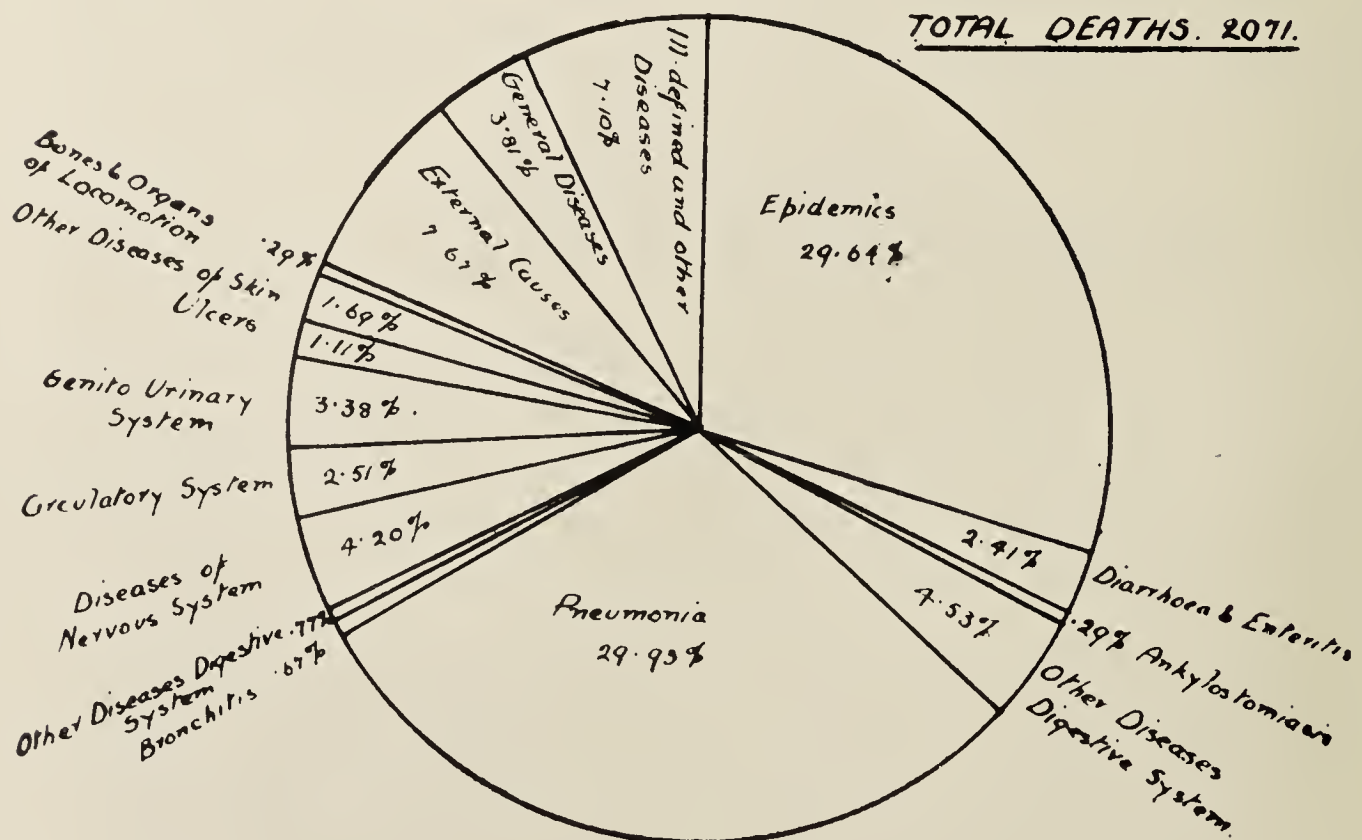
No information has been collected during 1934 which might suggest that the conclusion advanced last year, a conclusion which has in fact now been advanced in these Reports for many years in succession, should be modified in any way, though some data have been collected with regard to one important tribe, in respect of which we had not hitherto had any detailed

Proportion of Epidemics, Endemic, Infectious, Systemic and other Diseases  
shewn as percentages of Total Cases treated at Hospitals  
and Dispensaries.

TOTAL INCIDENCE. 376492.

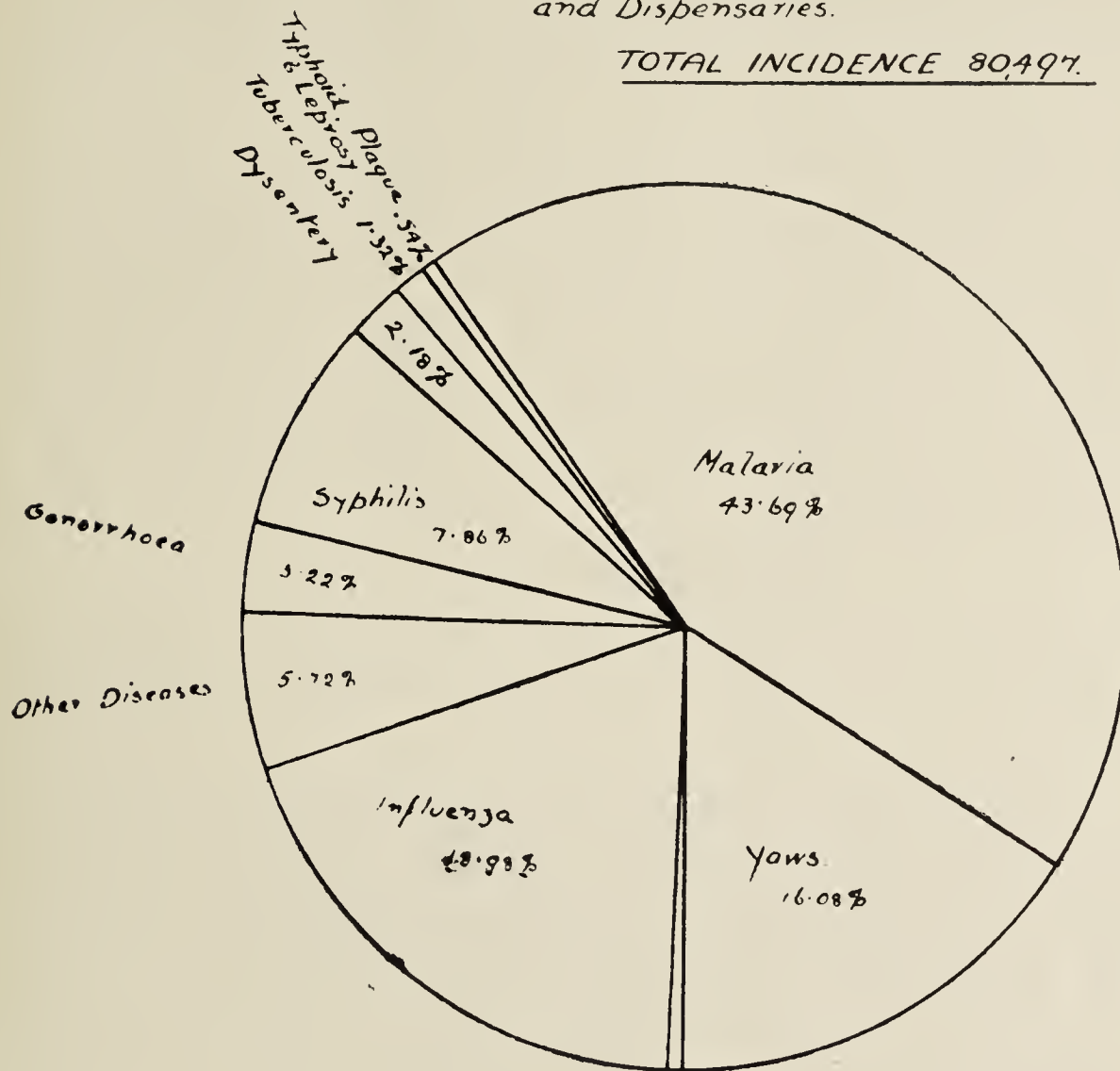


TOTAL DEATHS. 2071.

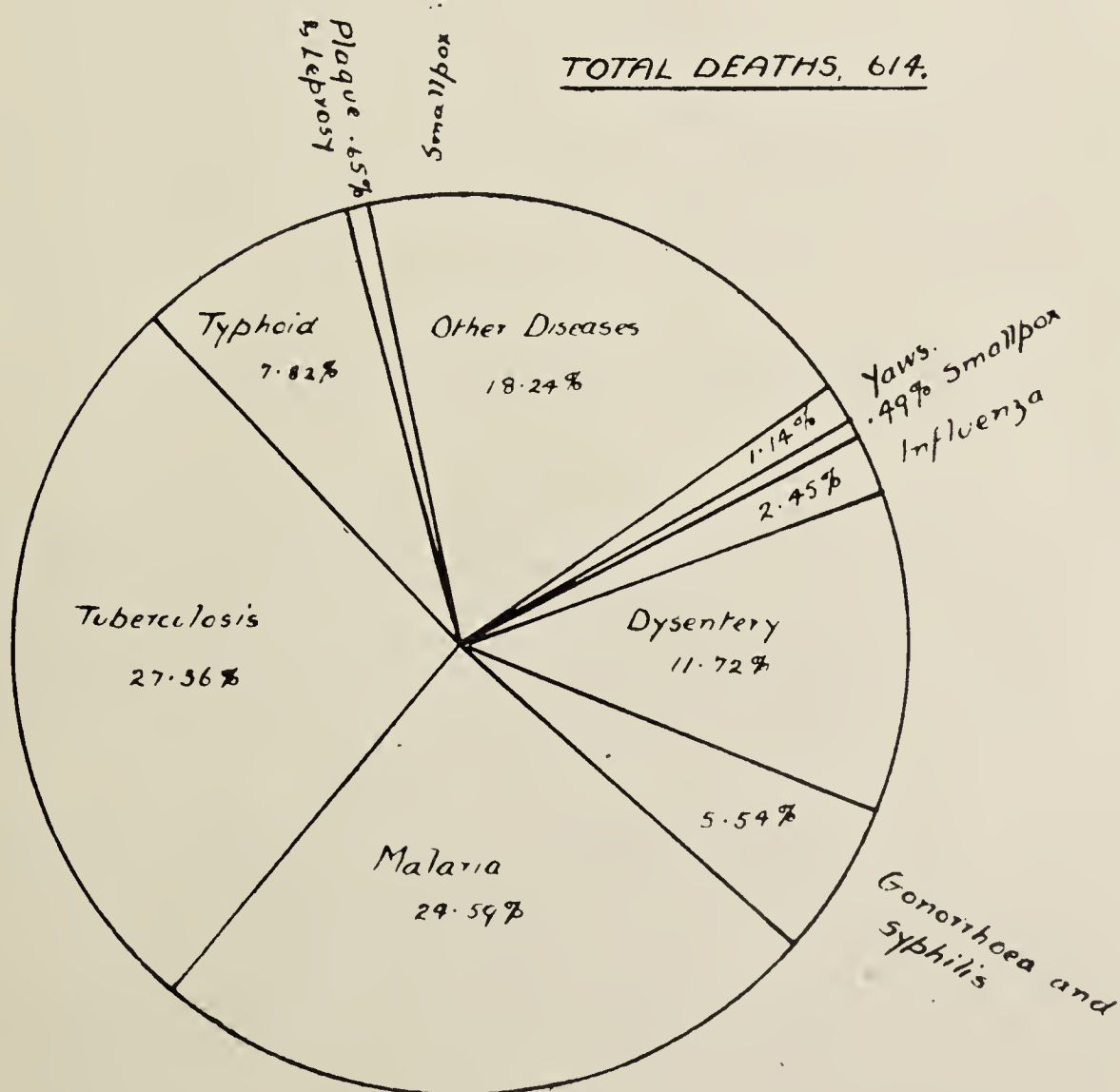


*Proportion in Percentages of Epidemic, Endemic and Infectious Diseases,  
Inpatients and Outpatients treated at Hospitals  
and Dispensaries.*

TOTAL INCIDENCE 80,497.



TOTAL DEATHS, 614.



information, which gives additional support to the view that the state of the public health of the native inhabitants, even of the highlands of Kenya, is far from satisfactory.

The tribe to which I refer is that whose members are known as the Embu, a people nearly related to the Kikuyu, and like them inhabiting high and for the most part fertile country in the neighbourhood of Mount Kenya.

The information which I now propose to recount was collected during a single month when the Medical Officer of the district had an opportunity of making a survey of the state of health of all the occupants of a single location or "parish" who, having "sanitated" their area by digging latrines, were anxious to receive treatment for intestinal worms. Altogether 3,750 persons or approximately 80 per cent of the inhabitants of the location turned up for treatment, and the findings may therefore be taken as indicative of the general state of health of the population of this particular area. All the data collected have not yet been analysed but the following results are none the less of interest.

#### Helminthic Infections.

A total of 3,750 persons, or 80 per cent of the population, attended voluntarily for worm treatment which in itself was an indication of the extent of infestation.

Of 398 adults who were questioned regarding the passage of worms, 311 stated that they had seen worms in their stools; the remainder stated that they "knew" that they had worms. Of the 311, 259 stated that they were passing round worms. It was not possible to examine a great number of stools microscopically, but of 53 "unpicked" specimens a *single* smear examination showed that 51 were infected, the parasites being :—

Ascaris	...	...	...	...	42
Taenia	...	...	...	...	14
Ankylostomes	...	...	...	...	9
Trinchina	...	...	...	...	10
Oxyuris	...	...	...	...	2

What repeated examinations might have shown it is not difficult to surmise.

#### Malaria.

Of 128 "unpicked" thick drop blood specimens 20, or 15.6 per cent, were positive.

#### Yaws.

The activity of yaws as judged by the incidence of papules was very restricted, only four cases being seen among 2,018 persons examined. On the other hand, the signs of past yaws were more common, 22 cases being found among 749 persons, while of 324 persons questioned 211 stated that they had had yaws when young, while of 135 questioned 66 stated that they had received injections for yaws.

#### Tuberculosis.

Tuberculosis in this particular area was apparently uncommon, only six cases being found among 2,018 persons examined.

#### Eye Diseases.

The following cases were noticed in 2,018 persons examined :—

Blepharitis	...	...	...	99 cases
-------------	-----	-----	-----	----------

(95 of these cases were in children under ten years of age, and 4 were in adult females.)

### Nutrition of Children.

With regard to 658 children of fifteen years and under, the following results were found :—

AGES IN YEARS					Good	Fairly Good	Fair	Poor
Under 1	..	..	..	..	15	35	4	5
1 to 2	..	..	..	..	11	44	12	11
2 to 3	..	..	..	..	3	35	25	18
3 to 4	..	..	..	..	4	37	25	15
4 to 5	..	..	..	..	—	47	6	11
5 to 6	..	..	..	..	3	43	13	8
6 to 7	..	..	..	..	4	36	9	11
7 to 8	..	..	..	..	9	37	4	3
8 to 9	..	..	..	..	7	16	5	1
9 to 10	..	..	..	..	2	13	2	2
11 to 15	..	..	..	..	42	18	3	4

With regard to these findings the Medical Officer remarks :—

“I think these figures justify the statement that the “fat and happy” African baby is the grossly overfed infant who develops into the “fairly good” to “poor” child of three to six years of age, and that the *survivors* of this group account for the comparatively large numbers of “goods” in eleven to fifteen year group.

The general medical survey made in Muruatetu’s location appears to show that the general population is only lightly infected with yaws and malaria and tuberculosis; that leprosy is uncommon; and that the diseases to which that location, at any rate, is prone, are diseases which arise from dirt and ignorance. Worm infections are widespread; jigger infections are common amongst the women and children; blepharitis is common amongst the children, and wrong methods of feeding result in 90 per cent of the surviving children of ten years and under being malnourished.”

Turning to what this officer has to say with regard to his Kikuyu out-patients at the main hospital, only some thirty miles away, in respect of their haemoglobin indices :—

#### “Haemoglobin Estimations.

The average haemoglobin percentage of children aged fifteen years and under, observed among all first attendances during the last quarter of 1934, is given below, and is compared with findings which I obtained at Digo Hospital during the latter part of 1933. In both cases the class of patient was the same, i.e. the hospital out-patient class.

AGE GROUP IN YEARS	PLACE			MALES		FEMALES	
				Total Examined	Percent- age Hb	Total Examined	Percent- age Hb
0 to 5	..	Keruguya	..	114	<i>Per cent</i> 62	210	62
			..	94	50	119	53
6 to 10	..	Keruguya	..	105	71	120	68
			..	168	61	123	61
11 to 15	..	Keruguya	..	74	76	35	76
			..	103	67	44	68

And with regard to Helminthiasis :—

HELMINTHIASIS

A. MALE CHILDREN

AGES IN YEARS	Total Examined	Total Infected	Percentage Infected	Parasites				
				1	2	3	4	5
0 to 2 ..	15	7	46	6	—	—	1	—
2 to 5 ..	11	7	63	7	1	—	—	1
6 to 10 ..	39	35	89	33	7	3	—	1
11 to 15 ..	39	36	89	30	5	6	4	—
TOTAL ..	104	85	81	76	13	9	5	2

B. FEMALE CHILDREN

AGES IN YEARS	Total Examined	Total Infected	Percentage Infected	Parasites				
				1	2	3	4	5
0 to 2 ..	43	24	55	24	—	1	—	—
2 to 5 ..	33	33	100	32	3	1	1	—
6 to 10 ..	33	31	93	29	1	2	—	1
11 to 15 ..	10	10	100	9	1	—	1	—
TOTAL ..	119	98	82	94	5	4	2	1

NOTE.—Parasites 1 .. .. . Ascaris  
          „ 2 .. .. . Taenia  
          „ 3 .. .. . Trichiuris  
          „ 4 .. .. . Ancylostomes  
          „ 5 .. .. . Oxyuris

And with regard to Jiggers :—

“Jigger Infections.

This is widespread. It is recorded that 1,369 attendances in the total of 11,995 first attendances at the hospital were on account of jigger infections. This bears no relation to the incidence of the infection—it records only the numbers of advanced infections. I have never seen such widespread, massive and neglected infections as in this district. In many of the advanced cases I notice that the infection produces an elephantoid condition of the feet; the skin is thickened by the formation of fine papillomatous processes, and on excising the thickened mass, the tissues are found to be honeycombed with jigger ‘nests’.”

So with regard to the state of the public health among two highland tribes.

In the Tana River district and in one at least of the coastal districts there was on account of smallpox an unusual mortality, but elsewhere there was, on the other hand, a continued diminution in the deaths from plague.

On the whole, the impression which one gathers from the reports of medical officers is that the state of the public health, taking the Colony as a whole, was as a result partly of drought, and partly of the depression in trade, rather poorer than usual, and, as I have indicated both in this and in earlier reports, the usual state of the health of the native inhabitants of the Colony is far indeed from achieving a standard which might be classed as good.

(b) WITH REGARD TO ASIANS.

It is difficult to say how Asians fared in Kenya in 1934, as compared with previous years. The Asian population is widely scattered over the Colony and any figures available are in all cases either too small, or too unreliable

or incomplete to justify detailed analysis. The majority of the Asian community are far from being well off, well housed or well acquainted even with all the more elementary laws of hygiene, and the general impression which one gathers is that the average standard of health which prevails is poor.

### (c) WITH REGARD TO EUROPEANS.

The figures at our disposal with regard to the European population are, as is the case of the Asian population, either too small, unreliable or incomplete to merit analysis and again one must have recourse to general impressions.

That the standard of health which prevails among Europeans in Kenya is very much higher than that which prevails among either Asians or Africans, there can be no doubt.

How the standard of health which prevails might compare with the standard prevailing among a similarly constituted population living in Europe, it is impossible to say with certainty. Having regard to the fact that general sanitary amenities in Kenya are still poor, compared with those of England, and that there is constant contact with a large native African population which suffers from a welter of communicable diseases, one would expect the general standard to be lower in Kenya than among a similarly constituted population in Europe, and both lay and medical opinion would probably be to the effect that this is the case, but it is doubtful indeed whether many would suggest that it is much lower, while beyond doubt as healthy and well-grown children are to be seen all over the highlands of Kenya, as are to be seen anywhere in England.

Perhaps one can best and most safely sum the situation up by saying that the general standard of European health in Kenya, though it still leaves much room for improvement is good and if more attention were to be paid to certain simple laws of hygiene and more care taken with regard to many elementary points in domestic sanitation, it could undoubtedly be made much better.

## (II) COMMUNICABLE DISEASES.

### MOSQUITO OR INSECT BORNE.

#### Malaria.

In 1934, 35,215 cases of malaria were treated at hospitals and dispensaries (other than out-dispensaries) as against 22,069 in 1924.

The cases were classified as follows :—

Tertian	...	...	...	...	605
Quartan	...	...	...	...	774
Aestivo-autumnal			...	...	10,217
Undifferentiated			...	...	1,263
Clinical	...	...	...	...	22,115
Cachexia		...	...	...	221
Cerebral	...	...	...	...	20

The increase recorded is partly due to the increasing tendency of Africans to seek treatment, but also it was partly due to a higher incidence of the disease in some parts of the Colony where malaria is not hyper endemic. Of these places one, namely the Trans Nzoia District, is a large rural area in European occupation where the prevention of malaria is still of necessity a function of the occupiers of the land; another was the urban area of Nairobi where, on the contrary, the prevention of malaria if it is to be undertaken at all must be undertaken by the Local Authority. The figures for notified cases of malaria for the past five years as given in the Annual Report of the Medical Officer of Health of Nairobi are as follows :—

1930	1931	1932	1933	1934
789	420	836	1,071	2,102

The Nairobi Municipal area comprises a total of about 34 square miles and much of the area is not easy to drain, and though much excellent drainage work has been done in the past few years, much more still remains to be undertaken.

Species Anopheline control is over even so large an area as 34 square miles, not, however, impossible, and though such control would undoubtedly entail considerable expenditure it is clearly for consideration whether the occurrence of over 2,000 notified cases, and of presumably a large additional number of cases which were not notified, would not fully justify the Local Authority in incurring whatever additional expenditure might be necessary to ensure that malaria instead of being a common ailment in the capital should be one of infrequent occurrence.

**Blackwater.**

The comparative table of cases treated by the Government Medical Staff for the past six years is as follows :—

		<i>Cases</i>		<i>Deaths</i>
1929	...	28	...	11
1930	...	50	...	8
1931	...	41	...	10
1932	...	52	...	2
1933	...	28	...	9
1934	...	45	...	11

The comparative table of cases notified in the capital town of Nairobi which lies at an altitude of over 5,500 feet for the past seven years is as given below :—

<i>Year</i>		<i>Cases</i>	<i>Year</i>		<i>Cases</i>
1928	...	4	1932	...	2
1929	...	0	1933	...	4
1930	...	5	1934	...	14
1931	...	2			

**Plague.**

Only 128 cases of plague were reported as against 163, 281, 604 and 959 cases in the years 1930, 1931, 1932 and 1933 respectively. No cases occurred in the towns.

**Trypanosomiasis.**

The total number of new cases reported was nineteen.

**Typhus.**

Five cases were reported.

**INFECTIOUS DISEASES.**

**Pneumonia.**

The comparative table of admissions to Government Hospitals for the past six years is as follows :—

<i>YEAR</i>					<i>Admissions</i>	<i>Deaths</i>	<i>Death Rate per 100</i>
1929	..	..	..	..	2,175	398	18.3
1930	..	..	..	..	2,014	389	19.2
1931	..	..	..	..	1,628	373	22.9
1932	..	..	..	..	1,363	311	22.8
1933	..	..	..	..	1,830	421	23.0
1934	..	..	..	..	2,593	620	23.9

In Nairobi “Diseases of the Respiratory System” were notified as being responsible for 295 deaths out of a total of 705 deaths, while of these 295 deaths 239 were recorded as being due to pneumonia and this group of diseases headed the list as being the group associated with the greatest number of deaths, the percentage of deaths so accounted for being over 40 per cent.

In Mombasa the group of "Diseases of the Respiratory System" comes second on the list with 25 per cent, while of 726 deaths 85 were recorded as being due to pneumonia.

In a rural district on the coast in 1933 it was estimated that 40 per cent of the deaths from all causes were due to "Diseases of the Respiratory System".

That there was any general incidence of pneumonia during the year we have no definite evidence and the increase in the hospital figures is probably merely another evidence of the increasing tendency of Africans to take advantage of hospital facilities when they are seriously ill. If, however, one has regard to the figures which I have quoted for the urban areas of Mombasa and Nairobi, and the rural district of Digo, it will be very clear not only what an enormous mortality there must be among the population of the Colony as a whole from pneumonia and other "Respiratory Diseases", but how far our hospital provision must still fall short of being able to meet the demands which in the early future must fall on it in connection with this one disease alone.

### Smallpox.

In 1934, after three years' complete freedom from smallpox except for three imported cases, and after sixteen years' freedom from anything in the nature of an epidemic, the Colony experienced for the first time since 1918 an outbreak of smallpox of considerable magnitude. Fortunately in 1934 it was possible, as it was not possible in 1916-1918, to ensure that the disease did not spread into any of the densely populated areas.

On January 15th a telegram was received in Nairobi reporting the occurrence of a case of smallpox at Kilifi, a small town on the coast, and it subsequently transpired that two days previously advice had been received by the District Commissioner at Garissa that smallpox had occurred among certain Somalis in the Northern Frontier district and among the Wa Pokomo on the Tana River, some hundred miles distant from Kilifi to the northward. Next day a case was reported from a station on the railway line some forty miles to the south of Kilifi. The Northern Frontier district is an extensive tract of barren and very thinly populated country and the Tana River a stream which runs for many hundreds of miles along the south-western boundary of that district. None of these areas are in what may be called medical occupation, their population is sparse and news travels but slowly.

It would appear from what we know that smallpox was first introduced into the Colony overland by some nomadic Somalis from Italian Territory towards the middle of December, 1933. Other Somalis carried the infection to some cattle watering places on the Tana River, from whence it spread up and down the river and to the coast, so that when it first came to our notice a considerable outbreak had already occurred, and the infection was widespread through the hinterland of the coastal districts.

In the particular circumstances of this outbreak hospitalisation was out of the question and all that could be done was to endeavour to control the outbreak by means of vaccination in the infected areas, and to ensure the safety of the rest of the Colony by providing a barrier of vaccinated people between the infected areas and the closely populated highland and lake districts. A Medical Officer, a lay European vaccinator and an Assistant Surgeon were operating in the infected area within three days of the first notification of the disease, while very shortly afterwards three other lay European vaccinators were operating on the periphery. As a result the disease was confined to the Northern Frontier and coastal districts and the Port of Mombasa remained uninfected. The main outbreak was under control within about three months, and, though smaller outbreaks continued to occur for some time afterwards in the Coast and Northern Frontier districts, the Colony and Protectorate were entirely free from the disease before the end of the year. In all about 1,800 cases were reported with about 650 deaths.

The number of vaccinations performed during the year including both persons vaccinated in the affected areas, in the process of forming a barrier and in the course of routine vaccinations was over 408,000.

INCIDENCE AND MORTALITY IN RELATION TO VACCINATION  
CASES AND DEATHS OCCURRED AS FOLLOWS

DISTRICT					Population	Cases	Deaths	Percentage of Case Death Rate
								<i>Per cent</i>
Northern Frontier	..	..	..	..	66,462	388	172	44
Tana River	..	..	..	..	14,744	884	319	36
Malindi	..	..	..	..	31,688	352	82	23
Kilifi	..	..	..	..	62,590	60	10	16
Digo	..	..	..	..	54,450	147	62	42
TOTAL ..					229,934	1,781	645	—

Of these districts the first three were probably largely unvaccinated at the time of the outbreak, while the last two had been fairly well vaccinated in 1930, that is four years previously, also in 1925. I have not struck a case incidence rate for the districts as the population of the Northern Frontier district, though large, is so very thinly scattered over some 17,000 square miles of country that such a figure would be misleading, since many of the people never had the opportunity of becoming infected and it would therefore be idle to suggest that the 388 cases which were reported occurred among any particular number of people. On the other hand, it is noticeable that in the case of the Digo and Kilifi districts, the number of cases sufficiently severe to be notified was much smaller than in the case of the Tana River area.

The case mortality death rates are, I think, of value only in so far as they refer to severe cases. On the Tana River the great majority of cases were, I think, reported and the great majority of these were severe. In Digo, on the other hand, with its much larger population many cases of slight infection were probably not reported or heard of, firstly because they were not severe and secondly because communications are difficult.

The lesson of this outbreak is beyond doubt that where there is a large unvaccinated population in Africa there is, under the conditions which still prevail, serious danger of an epidemic of smallpox should the infection be introduced.

The actual additional expenditure which was incurred in dealing with the emergency which arose in connection with the epidemic which has been described above, was approximately £1,000. In addition to this expenditure, however, there would require to be reckoned the value of the time of permanent officers of the department who were specially detailed to cope with the situation. The value of this time is difficult to calculate with precision, but it cannot have been far short of about £3,000.

A point of interest in connection with the vaccination campaign is that on two occasions vaccine lymph was despatched by an aeroplane chartered for the purpose and so reached its destination in a few hours, as against the couple of weeks which would have been required had such means of transport not been used.

Syphilis and Yaws.

The returns for these two diseases for the past three years are as follows :—

		1932	1933	1934
Syphilis	...	21,299	23,547	36,521
Yaws	...	80,126	61,172	60,439

The increase of nearly 13,000 cases of syphilis treated is accounted for as to 9,500 cases by cases treated at out dispensaries in Central Kavirondo, and as to 1,000 by cases treated at the various dispensaries for women and children in Nairobi. The remaining 2,500 cases having been contributed from many different areas.

I am doubtful whether any of these increases in cases treated represent an increase or at least a notable increase, in the incidence of the disease. As I have noted elsewhere, the total number of patients treated at hospitals, hospital dispensaries, and out dispensaries during 1934 exceeded the total for 1933 by no less than 115,291 and this increase generally speaking was due not to an increase in the incidence of disease but to an increased confidence in European medicine. That as regards syphilis the increase of cases treated should have been particularly marked in one district and one town is not, I think, significant. Syphilis is and has long been more prevalent in Central Kavirondo than in any other district, and far from uncommon in Nairobi. Anti-syphilitic treatment is becoming increasingly popular and I am more inclined to attribute the increase of cases treated in these places to this factor than to any marked increase in the incidence of the disease.

On the other hand, the fact that with a general increase of attendances for treatment for all diseases there has been no increase of attendances for treatment for yaws, but on the other hand, a slight decrease, is I consider of some significance, and I think that there can now be no doubt but that partly as a result of specific treatment, aided possibly by an increased use of soap and water, and partly as a result of some "epidemic factor" such as an acquired active immunity on the part of a great proportion of the population, the long drawn out epidemic of yaws in this part of Eastern Africa is now drawing to a close.

#### **Tuberculosis.**

The comparative table of cases treated is as follows :—

<i>Year</i>		<i>Cases</i>	<i>Year</i>		<i>Cases</i>
1929	...	676	1932	...	886
1930	...	756	1933	...	969
1931	...	874	1934	...	1,145

It would be unwise to draw any conclusions from this table.

#### **Leprosy.**

Three hundred and forty-five cases of leprosy were under treatment during the year. These figures having regard to the facts that about another thousand cases were seen at out dispensaries in one district alone, and that there must be many other cases which have never come to our notice, might be thought to give no indication of the general incidence of the disease, and to give only an indication of the amount of accommodation that we have at our disposal for the treatment of cases of this disease.

To a certain extent it is undoubtedly true that the number of cases which we treat is determined by the accommodation at our disposal, but it is equally true, I think, that if there had been a startlingly large number of cases of this disease requiring hospitalisation we should by this time have had more beds at our disposal, for sooner or later, an irresistible demand is usually met at least to some degree. There has, however, been no such great demand for treatment. Against this fact it might, however, be argued that there has been no demand because we have been unable to show that we can do much to ameliorate the disease by specific methods of treatment, and to such an argument it might indeed be difficult to supply an answer, for very consistently the reports of Medical Officers concerned in the treatment of leprosy are to the effect that it is extremely doubtful whether specific therapy is of much value in more than a very small percentage of cases. Nevertheless, the prestige of European medicine as a whole is now so great among Africans

that I feel sure that if the incidence of the disease were high we should see many more cases, while as it is, except in a few areas, the number of cases which apply for treatment is very small.

Enteric.

Two hundred and five cases were treated as against one hundred and twenty-three in the previous year.

Dysentery.

The classification of cases treated is as follows :—

		1932		1933		1934
Amoebic	...	235	...	744	...	752
Bacillary	...	52	...	218	...	279
Undefined	...	307	...	662	...	759

Diphtheria.

Nine cases were treated as against six in 1933.

Cerebro-Spinal Fever.

Sixty-one cases were treated.

Anthrax.

Ninety-five cases were treated with seven deaths.

Undulant Fever.

Five cases came to notice.

HELMINTHIC DISEASES.

DISEASES				1932	1933	1934
<i>Ankylostomiasis</i>	..	..		1,229	1,606	1,845
<i>Ascariasis</i>	..	..		6,750	7,515	8,158
<i>Tæniasis</i>	..	..		15,725	19,007	23,712
<i>Schistosomiasis</i>	..	..		252	351	453
TOTAL	..			23,956	28,479	34,168

These figures represent the number of patients treated. They give, as I have noted before, no indication of the prevalance of helminthic infection.

VITAL STATISTICS.

The non-native population of the Colony was determined by census in March, 1931, when the following figures were obtained :—

European	...	...	...	16,812
Indian	...	...	...	39,644
Goan	...	...	...	3,979
Arab	...	...	...	12,166
Others	...	...	...	1,346

The African population is estimated at 3,024,975.

REGISTRATION OF BIRTHS AND DEATHS.

The position in connection with the registration of births and deaths remains unsatisfactory and, except with regard to the population of the Nairobi Municipal Area where a system of notification of births and deaths has been established under a Municipal By-law and in one Native Reserve where an elementary system is operated by the Government Medical Officer, no figures are at our disposal which are worthy of detailed analysis.

In commenting on the registration of births and deaths occurring among the non-native communities, the Principal Registrar of Births and Deaths notes in his Annual Report for 1934 as follows :—

“In the circumstances no attempt has been made to calculate even a crude birth rate for any of the non-native racial groups as obviously this could only be entirely misleading, if not actually dangerous. And, in these circumstances, no consideration has been, or could be given to the preparation of any death statistics or even crude death rates.”

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES AMONGST EUROPEAN AND NON-EUROPEAN OFFICIALS IN THE COLONY AND PROTECTORATE OF KENYA

	European			Non-European		
	1932	1933	1934	1932	1933	1934
Total number of officials resident ..	1,919	1,756	1,846	2,797	2,457	2,448
Average number resident .. .. .	1,497	1,340	1,380	2,314	2,103	2,068
Total number on sick list .. .. .	1,018	946	971	2,249	1,965	2,114
Total number of days on sick list ..	6,753	5,956	7,054	11,608	9,532	14,847
Average daily number on sick list..	18.35	16.32	19.33	31.71	26.11	40.67
Percentage of sick to average number resident .. .. .	1.23	1.21	1.40	1.37	1.24	1.96
Average number of days on sick list to each patient .. .. .	6.63	6.29	7.26	5.16	4.85	7.02
Average sick time to each resident ..	4.51	4.44	5.11	5.01	4.53	7.18
Total number invalided .. .. .	6	5	9	5	7	8
Percentage of invaliding to total residents .. .. .	0.31	0.28	0.48	0.18	0.28	0.32
Total deaths .. .. .	3	3	4	5	4	3
Percentage of deaths to total residents	0.15	0.17	0.21	0.18	0.16	0.12
Percentage of deaths to average number resident .. .. .	0.20	0.22	0.29	0.22	0.19	0.14
Number of cases of sickness contracted away from residence ..	—	—	—	—	—	—

### III.—HYGIENE AND SANITATION.

#### A.—General Review of Work Done and Progress Made.

##### (1) PREVENTIVE MEASURES.

##### MOSQUITO AND INSECT-BORNE DISEASES.

##### Malaria.

A very large amount of work in the way of filling and draining and the clearing of the lake edge was carried out at Kisumu where by means of these measures and oiling and paris greening a very considerable degree of control has now been secured with regard to parts at least of the township. Complete control is still, however, a matter for the future and as the area to be controlled is large it will not be secured without considerable capital expenditure. A complete plan aimed at such control has been prepared and as the cost will be large and the town as one of the most important of central African airports has now more than local importance it is proposed to submit an application for assistance from the Colonial Development Fund.

At Kakamega, one of the chief centres of the gold mining industry, a large amount of work has also been done while much time has been devoted to advising mining companies with regard to anti-malaria measures.

At all places where anti-malaria measures are undertaken by the Department work is based on previous mosquito surveys which are very carefully carried out under the direction of the Medical Entomologist, while progress is continually checked by entomological observations.

I should like here to pay a tribute to the very careful, excellent and immensely painstaking work which has been carried out by the Medical Entomologist and his staff over the past fourteen years. As a result of this work we have a wealth of information with regard to many parts of the Colony from which it is now possible to make certain generalizations on which

practical measures of prevention can be founded. This information should in the immediate future be of immense value to the community and more particularly to entrepreneurs concerned with gold mining and it is not impossible that at some not far distant date we may find means whereby it may be of service even to the African peasant over the countryside. Hitherto such an eventuality has seemed too remote to come within the bounds of practical politics, but to-day I am less sure that some measure of control in the rural areas may not soon be practicable at least in certain areas for the amount of investigational work which has been carried out during these last fourteen years has been very large indeed and to some pertinent questions at least there are now answers.

#### **Trypanosomiasis.**

Here again great progress has been made at least with regard to the investigation of methods of prevention. Both on the shores of the Victoria Nyanza in Central Kavirondo and on the banks of one of the rivers running through South Kavirondo, important experimental work has been done with regard to the value of clearing bush and the elimination of fly by trapping and hand catching.

The work in South Kavirondo was made possible by means of help afforded from the Colonial Development Fund and thanks to the energy, interest and meticulous care of the field worker recommended to us by the Tanganyika Tsetse Research Department, it has been carried out in a most efficient fashion and judging by the results so far obtained it would appear to be not improbable that we may soon be in possession of a technique which will allow us, as and when we will, to re-occupy palpalis infested tracts of country economically and with safety.

#### **EPIDEMIC DISEASES.**

##### **Plague.**

Some ten years ago or even later plague was a disease of first-class importance in Kenya. In those days it was responsible for a large number of deaths each year both in certain of the native reserves, and in the townships, and in certain parts of the settled areas, while the possibility of its occurrence in the chief port of the Colony was an ever constant anxiety. For some years, now, however, the incidence has been steadily decreasing till in the last two years it has all but disappeared. Why the incidence of plague has decreased we do not know. Very certainly it has not decreased only on account of any preventive measures which have been adopted in the past, since the decrease has occurred not only where these measures have been effective, but it has taken place where none were carried out over wide areas.

In these circumstances it were idle to occupy space recounting the number of rats caught in this town or that. In so far as such operations are still carried out their value if any, is purely economic, for to-day at any rate they have no relation to the control of a disease which for the moment at least would appear to have all but disappeared from the territory, for reasons with which we are unacquainted. No cases, either rodent or human occurred either in the port or in any of the larger towns.

##### **Smallpox and Vaccination.**

A certain number of vaccinations are carried out every year at Child Welfare Institutions, in Prisons, among K.A.R. and Police recruits, and in the case of labourers brought up for medical inspection, but these numbers are not in themselves sufficient to ensure a well-vaccinated community. It has been our custom therefore from time to time to carry out vaccination campaigns by means of lay European vaccinators in the course of which districts are systematically dealt with and every man, woman and child are vaccinated or re-vaccinated at one time. In addition whenever a case of smallpox or an outbreak of smallpox has occurred during the past ten years the populations of the affected districts have been subjected to special vaccination campaigns.

As a result of this process a large proportion of the whole population of the Colony and Protectorate is more or less protected and a serious outbreak in any of the more thickly populated areas should be impossible. In certain outlying, backward and sparsely populated areas, however, such campaigns had not yet been undertaken up to the beginning of 1934, and into one of these, as has been recounted elsewhere, smallpox was introduced from a neighbouring territory, probably towards the end of 1933. On the first notification of the outbreak, however, systematic vaccination of the population of the area affected and of the populations of the neighbouring districts was at once undertaken, and, having regard to the scattered nature of the population, and the immense distance which had to be covered, the campaign was remarkably successful in controlling the disease within a reasonable period. The total number of vaccinations performed was, as has already been noted, over 408,000, and no serious difficulty was experienced in persuading the population to be vaccinated.

#### **Dysentery and the Enteric Fevers.**

No special preventive measures were carried out.

#### **Tuberculosis.**

No *ad hoc* preventive measures are in operation against tuberculosis.

### **HELMINTHIC DISEASES.**

During the year much work was done in many districts with regard to the institution of pit latrines.

#### **(2) GENERAL MEASURES OF SANITATION.**

There is nothing new to record in this direction. Routine work has been carried out by the local authorities as usual, though on account of the general and continued shortness of funds, there has perhaps on the whole been a lowering in the standard and amount of work, while much very essential work remains as heretofore to be undertaken.

#### **(3) SCHOOL HYGIENE.**

There is still no School Medical Service, and in the absence of such a service I have nothing to report save that where possible medical officers in the Native Reserves have carried out a certain amount of school medical inspection. As, however, our hospitals and dispensaries appear to grow daily more popular with the African, who attends in ever increasing numbers, it is becoming increasingly difficult for medical officers to devote as much time as before to this class of work, and till further staff is available school medical inspection must remain largely in abeyance.

#### **(4) LABOUR CONDITIONS.**

The only notable development of the year has taken place on the gold fields, where a number of compounds have been established. Pending development these compounds are still all of a temporary nature, but on the whole they have been very well managed, and in cases, exceptionally well managed. As the labourers in all cases come from no great distance and often from the immediate neighbourhood of the mines no exceptional problems have presented themselves, save with regard to pneumonia which on occasion gave rise to some anxiety.

#### **(5) HOUSING AND TOWN PLANNING.**

No major urban schemes were adopted during the year.

In the Native Reserves work has proceeded steadily, if slowly, along the lines described in former reports.

#### **(6) FOOD IN RELATION TO HEALTH AND DISEASE.**

##### **Inspection and Control.**

Routine inspection has been carried out as usual where possible.

##### **Markets, Dairies and Slaughter Houses.**

Routine work has been carried out as usual.

### **Food Supplies.**

In the Native Reserves food supplies on account of climatic conditions have been rather poorer than usual.

In the urban areas no change has taken place in the unsatisfactory position which was described in some detail in the Report for 1933, as the economic condition of the urban African has undergone no material change during the past year.

### **B.—Measures Taken to Spread the Knowledge of Hygiene and Sanitation.**

The teaching of hygiene by such means as is available is one of the everyday duties of almost every officer of the Department, more especially in the Native Reserves, and as usual much work of this kind has been carried out by these officers as a routine.

As usual, large numbers of pamphlets on various subjects were widely distributed.

### **C.—Training of Sanitary Personnel.**

The systematic training of Africans to be dispensary health workers was continued as heretofore at the Jeanes School.

### **D.—Recommendations for Future Work.**

For some years past it has been an instruction from Government to all Departments that estimates for the ensuing year should not exceed those for the preceding year. Instructions to the same effect will not improbably be issued with regard to the year 1936, and as it is at the moment exceedingly doubtful whether, in view of the steadily increasing demands which are being made by the African population for medical relief, it will even be possible to maintain all existing institutions on our present financial provision, it would serve no useful purpose to make any recommendations at the present time with regard to new work which must of necessity involve Government in large additional expenditure.

It may not be out of place here, however, to note that new work, when it becomes possible once more to embark on it, will be the more efficiently performed if in the interval we have acquired new knowledge, and in this regard to draw attention to the remarkable opportunities which would exist in connection with the Medical Research Laboratory at Nairobi, provided only that adequate staff were available.

This laboratory which was erected only a few years ago was designed of intention on a generous scale in the hope that sooner or later it might form the basis of a great institution for clinical research, and house not only our own research workers but workers from overseas or from elsewhere in Africa.

This ideal, however, has not so far been fully realized, partly because for some years past funds have been limited, partly because the hospital facilities which equally with laboratory facilities are essential for clinical research are still inadequate, and partly because the degree to which laboratory facilities and, even now to an extent, clinical material are available is not widely appreciated outside of East Africa.

There are therefore, three difficulties to overcome, the provision of funds, the provision of hospital facilities in the neighbourhood of the laboratory, and the difficulty of making known the opportunities which already exist in Nairobi for clinical research. Perhaps there is another difficulty, the difficulty of making it adequately clear how great a service might be rendered not only to the development of the peoples of Kenya and of industry in Kenya but to the development of medicine as a whole and of peoples elsewhere, if medical research could be adequately prosecuted in this Colony.

With regard to the last point, I would refer to what I have said elsewhere in this Report with regard to the medical issue which arises in connection with the administration of our penal system, to the fact that at present we

know almost nothing at all of the physical, psychological or the psychiatric condition of our prisoners, and more particularly of our juvenile offenders, or of the factors social, biological or environmental, which lead to the commission of what we call crimes. Very clearly an expert prison medical staff is required, but if such a staff is to function with effect, it cannot do so unaided, and without some means of obtaining answers to the many basic questions which it will soon find cause to ask with regard to Africans as a people, for that staff will inevitably require information as to how both normal and abnormal Africans function and behave and react not only inside a prison but in freedom.

I was referring to this question among others when in the Annual Report for 1933, I said that "If mental health is a problem in the older countries, it is no less so in Africa, but here we know less, and if we are to progress, and to progress without needless and heedless damage, two medical investigations are of the greatest emergency. Firstly a research on a wide front regarding African mentality, and the physical basis of the African mind; and secondly a research with regard to the processes of African physiology under African conditions. When these things have been done we may perhaps know better both how to train the African mind, and how to feed the African body, economically, and with less danger of damage than exists to-day."

There are, however, other directions in which research in East Africa might be of service. As I noted there if the colour of an African's skin be different from that of a European or an Asiatic it is not unreasonable to suppose that in many other respects is he different not only anatomically but physiologically from other races, and we have some reason to think that this is true.

But whether this be true or not, there is the undoubted fact that his environment is very different indeed, and so any medical investigation which is carried out in East Africa is very differently conditioned from a similar investigation carried out in Europe. In these circumstances, might we not by investigation in East Africa find answers to problems of general medical importance which have hitherto eluded investigators elsewhere? To mention only two, there are the many problems of the anæmias and there is the problem of the causation of malignant disease.

I come to our three first difficulties, those of funds, hospital facilities and publicity for the opportunity.

As regards the first, it is I think clear that no country in the very early stages of development, as is the case in Kenya, can afford from Colonial Funds to support on any adequate scale, a great scheme for progressive medical research, nor indeed is it often that any research is solely supported from national funds even in richer countries.

Indeed it is more often the rule that the richer the country the greater is the extent of endowment and support from private sources. And so if we would carry out medical research in Kenya, on any extensive scale, it is essential to give publicity to the opportunities which exist, and to confirm beyond doubt that the opportunities are real. It is with regard to this matter that I desire here to venture a recommendation. To confirm that the opportunities are as real as I believe them to be it is desirable that they should be investigated by some person or persons of outstanding reputation in the world of medical research. Such investigation would of course entail a visit to Kenya of shorter or longer duration, and I would suggest that if the expenses of such a visit would be greater than the Colony could at present afford, it would be by no means inappropriate to seek assistance from the Colonial Development Fund for the purpose.

As regards the second difficulty namely that of adequate hospital facilities in the neighbourhood of the laboratory it is now fortunately the case that these are likely soon to be provided on what we hope will be an adequate scale.

As regards publicity for the opportunity I have I think already made an adequate suggestion, for I have no doubt but that if the opportunity could be investigated as I have recommended, by some person or persons of outstanding reputation in the world of medical research, it would receive all the publicity which it requires not only in the world of medical research but in that more prosperous world of successful commercial enterprise which elsewhere, though not yet in Kenya, has so often and so generously supported enterprise in scientific research.

IV.—PORT HEALTH WORK AND ADMINISTRATION.

The number of vessels which entered Kilindini or Mombasa Harbours during the past three years was as follows :—

	1932	1933	1934
Steamships .. .. .	515	599	584
Dhows .. .. .	1,506	1,385	1,633
Steamship tonnage .. .. .			1,902,365
Vessels medically inspected on arrival .. .. .			116
Dhows medically inspected on arrival .. .. .			125
Vessels arriving in port infected .. .. .			3
Vessels placed under quarantine restrictions or subjected to special sanitary measures .. .. .			3
Passengers medically inspected under special small-pox regulations ..			8,530
Passengers detained under observation .. .. .			Nil
Passengers landed subject to surveillance .. .. .			227
Bills of health issued .. .. .			1,002

PORT HEALTH STAFF.

- (a) Port Health Officer (employed also as Municipal Medical Officer of Health).
- (b) Sub-Assistant Surgeon (part-time).
- (c) Clerk.
- (d) Two Orderlies (African).
- (e) Mosquito Searcher (African).
- (f) Head Rat-catcher (African).
- (g) Office Boy.
- (h) Labourers, rat-catchers, etc.

EXAMINATION OF SHIPS ON ARRIVAL.

No alteration was made in the system established in 1932 and described in the Report for that year. The majority of ships are not now boarded by the Port Health Officer.

INTELLIGENCE.

The weekly epidemiological bulletin broadcasted by the League of Nations, Eastern Bureau at Singapore was received regularly and no serious defects in transmission were experienced.

INFECTIOUS DISEASES IN VESSELS.

*Steamers.*—Two steamships arrived with large numbers of cases of measles on board, and one after having landed a case of smallpox at Mauritius some days previously.

*Dhows.*—No infected dhows arrived.

INFECTIOUS DISEASES IN THE PORT.

In spite of the existence of a serious epidemic of smallpox in the districts surrounding Mombasa, throughout most of the year, the infection was not introduced into the town, and the town and port remained free from this and all other major infectious diseases throughout the year.

## **SPECIAL PREVENTIVE MEASURES AGAINST THE INTRODUCTION OF INFECTIOUS DISEASE.**

Regulations in reference to the landing of passengers from India continued in force and were unchanged throughout the year.

### **SANITARY CONDITIONS OF THE PORT.**

The port area, wharves, sheds, etc., were maintained in a very satisfactory condition indeed throughout the year, and in this connection the greatest credit is due to the Port Administration, that is to the Administration of the Kenya and Uganda Railways and Harbours. The port area at Kilindini is so far as sanitary conditions and general cleanliness is concerned a model of what a port area should be and I have the very greatest pleasure in acknowledging the debt which is due to the Railways and Harbours Administration in this respect, and for its very hearty co-operation at all times in all matters affecting the sanitation of the port.

### **RAT DESTRUCTION.**

The structural and sanitary condition of the wharves and sheds is excellent and not such as to encourage undue breeding.

Rats trapped, 5,846; Rats examined for plague, 481.—Number found infected, Nil.

### **MOSQUITO BREEDING.**

The port area and small craft are consistently searched for mosquito breeding. The whole area is well drained and mosquito breeding is exceptional.

### **IMPORTATION OF USED CLOTHING.**

Four hundred and nine consignments were passed on their accompanying certificates of disinfection.

### **INSPECTION OF IMPORTED FOODS.**

Owing to the services of a Sanitary Inspector not being available no routine examination of imported food was undertaken.

## **V.—MATERNITY AND CHILD WELFARE.**

Maternity and Child Welfare work is carried out by three main agencies as follows :—

- (a) The Government Medical Department.
- (b) The Missionary Societies.
- (c) The Lady Grigg Welfare League.

Government expenditure is not, however, limited to that directly incurred by its own Medical Department. Five Missionary Societies receive Government grants amounting in all to a sum of £3,700 for general medical work which are doubtless of assistance to these Societies in providing maternity relief, while very valuable child welfare work is done by many of the Jeanes teachers, who though employed by the Missions are subsidized as regards a portion of their salaries by the Education Department.

The African Maternity Centre at Punwani in Nairobi, the Indian Maternity Home, Nairobi, and the African Maternity Centre at Mombasa, which are branches of the Lady Grigg Welfare League received £1,350, £250, and £700 respectively per annum from Government funds in 1934.

### **Departmental Work—Urban.**

#### **STAFF RETAINED BY GOVERNMENT.**

*Nairobi.*—One woman medical officer and two European health visitors, and African staff.

*Mombasa.*—One woman medical officer and two European health visitors, and African staff.

*Eldoret.*—One European health visitor and African staff.

ATTENDANCES AT URBAN CHILD WELFARE AND ANTE-NATAL CENTRES  
AND HOUSE VISITS

	1932	1933	1934
NAIROBI (Three centres)—			
Attendances .. .. .	40,292	35,325	46,929
House visits.. .. .	3,648	4,373	7,738
MOMBASA (Five centres)—			
Attendances .. .. .	30,388	28,163	33,827
House visits.. .. .	12,750	17,989	15,206
ELDORET (Two centres)—			
Attendances .. .. .	10,831	9,278	13,998
House visits.. .. .	5,245	6,001	4,704

The work at all urban centres has shown progress during the year; but it is greatly to be regretted that to no inconsiderable extent the increasing popularity of the centres militates against increased house visiting. House visiting is the basis of child welfare work in Africa equally as in England, but, without a larger staff, any important increase of this side of the work is impossible. Neither a greater amount of house visiting, nor a great attendance of mothers and children at the centres, however necessary and desirable as that may be, can at present, either alone or together, ensure a healthy childhood, culture is still too low, housing too poor, and poverty still too extreme to allow the social worker to do much more than to point at defects without great hope that they will be remedied and only too often with the knowledge that remedy, for the moment, is impracticable.

As I noted in last year's Report, the great needs of the town populations in respect of child welfare are for :—

- (1) Compulsory education.
- (2) Higher wages and better housing.

This year I would add to these needs a need that local authorities should if possible acquaint themselves still more fully with the conditions under which the great majority of those for whose well being they are responsible are born and brought up and with the implications of these conditions.

**Departmental Work—Rural.**

A few years ago it was a rare occurrence for a maternity case to be brought to hospital, and even so it was only the hopeless cases which were so brought. To-day all over the Colony women come to our hospitals before labour has commenced and only a lack of beds stands in the way of the establishment of a very extensive indoor maternity service, and only the lack of a sufficiently large number of women of adequate education to be trained, and the lack of facilities to train them, if they were available, stand in the way of the establishment of an adequate home midwifery service. The problem how to establish adequate maternity services in this Colony is now no longer a psychological one but one of economics alone.

Child welfare work is to a greater or lesser degree carried out at all district hospitals to which nursing sisters have been appointed, so far as the increasing demands of their hospitals leave them with time to devote to this activity.

**The Work of Missionary Societies.**

The Medical Missions throughout the Colony provide in most cases some maternity relief, while in all cases they carry out child welfare work which, though not highly organized, is very considerable in amount and of the very greatest value. The success of their work in this direction lies of course in the fact that it is accompanied by and is part and parcel of a general educational and cultural effort affecting the whole community in the neighbourhood of each mission. In this work no small part is played by the African Jeanes teachers and their wives.



## HOSPITALS IN TURKANA AND NORTHERN FRONTIER PROVINCE AND LAMU

DISTRICTS						In-patients	Out-patients	Out-dispensaries
Lodwar	..	..	..	..	..	178	3,375	—
Lokitaung	..	..	..	..	..	233	1,474	—
Wajir	..	..	..	..	..	273	3,732	—
Moyale	..	..	..	..	..	105	5,309	—
Lamu	..	..	..	..	..	287	13,318	12,795
TOTAL						1,076	27,208	12,795

## HOSPITALS IN NATIVE RESERVES

DISTRICTS						In-patients	Out-patients	Out-dispensaries
Wesu	..	..	..	..	..	935	6,445	19,169
Kabarnet	..	..	..	..	..	156	2,740	5,546
Kitui	..	..	..	..	..	1,137	10,723	39,246
Kapenguria	..	..	..	..	..	363	3,269	—
Narok	..	..	..	..	..	290	3,711	11,738
Malindi	..	..	..	..	..	134	9,064	5,137
Kakamega	..	..	..	..	..	2,326	14,262	158,194
Kilifi	..	..	..	..	..	617	3,382	10,496
Kericho	..	..	..	..	..	855	4,362	8,324
Machakos	..	..	..	..	..	1,595	12,856	90,394
Muriranjias	..	..	..	..	..	343	7,967	—
Kisii	..	..	..	..	..	1,411	11,424	46,841
Nyeri	..	..	..	..	..	927	20,538	5,331
Fort Hall	..	..	..	..	..	2,562	13,548	35,149
Voi	..	..	..	..	..	—	—	—
Meru	..	..	..	..	..	1,829	21,325	91,972
Kiambu	..	..	..	..	..	1,510	11,798	22,391
Maseno	..	..	..	..	..	—	—	77,023
Kisumu	..	..	..	..	..	—	—	31,450
Msambweni, Digo	..	..	..	..	..	546	2,650	6,875
Kapsabet	..	..	..	..	..	476	6,908	14,730
Keruguya	..	..	..	..	..	695	11,904	106,455
Tambach	..	..	..	..	..	168	1,914	201
TOTAL						18,875	180,790	786,662

A feature of the year 1934 as of the years which preceded it has been the general improvement of the standard of medical and surgical work and of nursing. The degree of improvement has, however, probably been less than in the preceding years, since there is obviously a limit to the extent to which by means of care and economy still more work can be carried out in a more efficient fashion, without any increase of expenditure. For several years now the funds at the disposal of the Department have steadily been reduced while the calls on the Department for treatment have steadily increased and to a very considerable extent have been met without loss of efficiency. The end of this process is, however, in sight, and towards the close of the year 1934, it was becoming very clear that, unless further funds could be made available in the near future, we must either endeavour to stem the flood of patients seeking treatment, or grievously lower the standard of treatment provided.

To no small extent this state of affairs is due to one or other or both of two causes—

- (a) the gradually increasing capacity of the hospital staffs taken as a whole to deal with and to treat and nurse heavy cases both surgical and medical, and
- (b) the gradually increasing desire of African patients to take advantage of these facilities.

But this increasing capacity to treat and this willingness to be treated may readily lead to inefficiency if the number of heavy cases becomes too great. It is one thing to deal with a couple of dozen chronic ulcers, no matter

how deplorable they may be, it is quite a different matter to deal with half a dozen acute pneumonias and half a dozen cases which have been operated on for some abdominal condition. That however is the trend of African hospital practice to-day, and it is not possible to deal with the new class of case effectively with the same staff, funds and accommodation which served for the old, and both staff, funds and accommodation are feeling the strain, and here, as elsewhere, the problem with which we are faced is not essentially an administrative one, but an economic one. Given the funds administration would be very easy.

### SURGERY.

In illustration of the type of some of the work which is now being carried out it may be noted that over five thousand operations were carried out at Native Hospitals during the year 1934, under general anæsthesia, and very nearly four hundred at European Hospitals. In addition many hundreds of operations were carried out under various forms of local anæsthesia.

Of the 5,000 odd cases operated on at Native Hospitals, 1,157 were dealt with at the Native Hospital, Nairobi, and with regard to these the Surgical Specialist notes as follows :—

“1. The type of disease for which surgical treatment is sought is definitely altering. Formerly the larger proportion of operations at this hospital were performed for such things as local injuries, ulcers, fractures and other less serious conditions. Surgical practice however is now approximately towards that which obtains in hospitals in England and a very much larger number of major operations are being performed. This undoubtedly points to increasing confidence on the part of the native and to the success of the policy of maintaining a permanent surgical unit.

2. Cases of surgical tuberculosis are definitely on the increase and ‘glands-in-neck’ are being seen much more frequently. Usually, however, the cases of the latter are too far advanced and secondarily infected to be suitable objects for operation.

3. Malignant disease also appears to be on the increase from the surgical point of view.

4. Nine cases of goitre were successfully operated upon during the year, the disease appearing to be common in the Kikuyu Reserve. No cases of exophthalmic or toxic goitre have however been seen. The performance of this operation has been enormously simplified by the introduction of endo-tracheal anæsthesia.

5. One interesting case of chronic duodenal ulcer was operated upon. Only one other case in an African has been seen by the writer (reported in the E.A.M.J.).

6. It is only of recent years that the writer has seen a definite case of appendicitis in the African native, but during 1934 four cases were operated upon, two of acute inflammation and two of abscess.

7. A large number of cases of vesico-vaginal-fistula were operated upon, this condition following child-birth appearing to be extremely common in Kikuyu women. After a trial of various methods, the writer now as a routine performs a combined operation—the bladder is sutured through a suprapubic cystotomy wound and the vaginal wall per vaginam. This procedure appears to present the greatest possibility of success.

### REMARKS ON ORGANIZATION.

✓ 1. As a routine the Surgical Specialist performs the major operations and the majority of the minor procedures are carried out by the other Medical Officers. Not only would it be impossible for the Surgical Specialist to find time to perform all the latter, but it is considered desirable that other Medical Officers should not be entirely divorced from surgery.

2. The efficiency of the theatre organization has to some extent suffered recently by changes in the staff but it is hoped that in the near future a satisfactory working unit will be obtained from the African personnel.

3. The enormous difficulties under which operations are performed in the present building are too well-known to require reiteration, but the surgical equipment is well up to date."

#### ANÆSTHETICS.

Anæsthetics in Native Hospitals are administered either by a Medical Officer, a European Nursing Sister or by an experienced African Hospital Assistant or Dresser; they are never administered however, except by a qualified Medical Officer, or under the immediate personal supervision of such an officer.

In the course of the 5,000 odd general anæsthetics which were administered during the year, nine deaths occurred either during induction, during the anæsthesia or shortly afterwards. In five of these cases the anæsthetic was being administered by a Medical Officer, in three cases by a Hospital Assistant and in one by a Dresser. In five of the cases the condition of the patients was critical before operation, while in two a myocarditis was discovered post mortem and in two only was no predisposing cause discovered. In no case did the administration of the anæsthetic appear to have been unsatisfactory.

During the year a great advance was made in the administration of anæsthetics at Nairobi and in the training of Hospital Assistants in their administration, by retaining at Nairobi a Medical Officer who acted in the capacity of a Specialist Anæsthetist. The following extract is taken from that officer's report :—

"During the year 1,157 operations were performed at the hospital, 1,017 upon natives and 138 upon Asiatics.

Of the native cases 619 were anæsthetized by me and of these evipan sodium was used in 76, the endo-tracheal method was adopted in 53 and 11 were done under local infiltration. Other Medical Officers dealt with 99 cases and the remaining 299 anæsthetics were given by Native Hospital Assistants. One such assistant, Charles Karau, is permanently detailed for anæsthetic work and gave 245 of the 299 anæsthetics referred to above. When engaged upon this work natives however proficient are always supervised by a Medical Officer.

Three anæsthetic deaths occurred during the year. The first was a case in which circumcision was performed and the post-mortem revealed severe fibrotic myocarditis of which no clinical signs were detected in life.

In the second case there was an acute kidney condition undiagnosed before death and an early terminal pneumonia which was not found on clinical examination.

The third death occurred under evipan sodium. The patient had multiple septic wounds and one leg was gangrenous. The only hope of recovery appeared to depend upon amputation which was undertaken with the fore-knowledge that death might ensue.

It is the rule of the hospital that all Asiatic anæsthetics must be administered by a doctor and of the total of 138, 87 were given by me, 25 by other Medical Officers and 26 by private practitioners. Of my cases 9 were done under evipan sodium making the total of operations in the hospital in which that drug was used 85.

The very large majority of cases are anæsthetized with ether alone or with ether following ethyl chloride. Chloroform is used most infrequently and never by natives. In short operations the open method is used but in longer cases warmed ether vapour is given by endo-pharyngeal insufflation by a closed method. Endo-tracheal anæsthesia is used in all

operations upon the head and neck and in upper abdominal cases and for this purpose the locally made apparatus has been successful. The amount of ether used in any closed method is probably a quarter of that expended by the open method and the Medical Storekeeper recently volunteered the statement that he had noticed a marked reduction in the amount of ether being issued to the Nairobi hospitals. A good deal of this saving is attributable to the use of evipan sodium. One of the anæsthetic deaths referred to above occurred under evipan but the patient was moribund before operation which offered the sole chance of recovery.

With regard to the need for gas and oxygen anæsthesia, there is no doubt that its introduction would result in a marked improvement in the standard of our practice but for psychological reasons its use in natives is not so clearly indicated as it is in Europeans. Africans in a large percentage of cases appear to me to have a fatalistic outlook which enables them to take anæsthetics with a minimum of apprehension. Asiatics on the other hand tend to be more nervous than Europeans and for them the easy induction ensured by nitrous oxide would be a great boon.

The tendency for severe shock to follow pelvic operations in women has been less noticeable since the routine use of carbon dioxide as a means of thoroughly ventilating the lungs at the end of the anæsthetic thus materially shortening the stage of return to consciousness.

During the year the operation of oesophagoscopy was successfully carried out on three occasions. Though the special instruments required for this procedure are expensive and seldom used, on the occasions when they are required lives are saved which would otherwise be almost certainly lost."

#### TRAINING OF AFRICANS.

##### HOSPITAL ASSISTANTS, COMPOUNDER ASSISTANTS, HEALTH WORKERS, ETC.

The training of Africans to undertake various types of medical work such as hospital and maternity nursing, dispensing and "health" work, and sanitary and laboratory and entomological work efficiently, with a genuine sense of responsibility and with due pride, is, in a Colony such as Kenya, one of the most important functions of the Medical Department, for unless such training is provided and provided successfully, medical relief and instruction in hygiene can never be made available for the population as a whole on the wide scale on which it is required.

Up to the present the medical training of Africans in Kenya has been limited to the particular branches of work which I have specified above and so far we have made no attempt to provide any form of higher medical training, that is, we have not yet attempted to train Africans to be either Sub-Assistant Surgeons, or fully qualified medical practitioners.

The reasons for so limiting our attempts at training have been two. Firstly, there is the fact that there is not yet available in Kenya a supply of African students whose literary and general education has gone sufficiently far to allow them to take advantage of a full medical training, nor, up till very recently even any class which might have been trained to be sub-assistant surgeons, while, even if there had been, there was the important fact that unless people can be nursed doctors can be of little service. Furthermore, it was felt to be of supreme importance to establish in the first instance a high standard of work among all the "junior" grades in the Department for from the beginning our dressers had been illiterate, and if too early we had commenced to provide a medical training for the new students from the high schools it would have taken years thereafter to make it clear that even a high school education will not always enable one to be a good "dresser" or nurse and that to be an efficient "dresser" or nurse demands nothing less. Our Africans did not naturally associate education with the vocation of a "dresser" or nurse, but only with that of a "doctor", and so we blocked the channel to doctoring and concentrated on nursing, till to-day the supply of fairly well-educated candidates for the nursing service (hospital assistants) exceeds the demand.

Unfortunately among those of our candidates who have had an education such as might enable them to become genuinely efficient nurses there are as yet no women and the essential nursing problem is still to solve. The solution lies with the Department of Education.

Nevertheless some advance has been made, more and more some girls, or women, with at least a smattering of literary education are becoming available, and as they become available we employ them, and in most native hospitals there are now some African women employed on nursing duties, while at the Lady Grigg Maternity Centres at Nairobi and Mombasa, as in our own hospitals, some few are being trained to be midwives. The numbers are, however, but small and our outstanding need is still a need for fairly well educated African women.

Leaving the question of the employment of women aside, however, the situation now is that as regards the need to recruit fairly well-educated males to serve as nurses, or, as they are now termed "hospital assistants", there is no lack of candidates, this type of service is now recognized as one where education is required and as one with some prestige, and so the time would appear to have come when we may safely proceed to allow to a few Africans, at least, an opportunity to obtain a training in the elements of medical practice, and to become if they can, sub-assistant surgeons. This training, however, we do not propose to provide in Kenya, firstly because the numbers who could benefit by it are still too small to justify the establishment of a school, and secondly because an adequate school which has places to spare has already been established in Uganda. It is hoped to establish two scholarships yearly for the training of Kenya Africans in Uganda, from 1936 onwards.

For the moment we ourselves shall continue to concentrate on the production of as efficient "hospital assistants", compounder assistants, and other junior staff as we possibly can.

To enter in this Report on any attempt to provide a detailed record of the work and progress of the Medical Training Depot in Nairobi is unfortunately impossible, as such a record would require a volume to itself. It must suffice therefore to note that the work entails practically the full time services of a medical officer detailed for the purpose, the full time services of a seconded non-commissioned officer of the R.A.M.C. and no small measure of assistance from the ordinary medical and nursing staff of the Nairobi Native Hospital which itself is in effect the training school, since it is now almost entirely staffed by hospital assistants in training.

As time passes this course of training is being made steadily more practical in character and now occupies five years. As time passes also the type of recruit is steadily improving, while at the same time it is becoming no longer necessary to offer a high initial wage in order to attract candidates.

At the end of 1934 a total of twenty-five hospital assistants had completed training, and of these all except eight have been posted away from Nairobi. The reports which have been received of their work have generally been highly satisfactory, and so far none has left the service either at his own instance or ours.

In concluding this short note on training, I desire to record my appreciation of the very great debt which the Department owes to all the European medical and nursing staff who have taken a part in the training of Africans and very particularly to the three Medical Officers, who since the commencement of systematic training in 1930 have at various times been in charge of the Medical Training Depot at Nairobi.

#### VENEREAL CLINICS.

Special clinics for the treatment of venereal disease in women were held weekly at Mombasa at each of five centres, and at Nairobi at each of four centres. Men are dealt with at three clinics weekly at Nairobi and at one at Mombasa. On the whole there has been progress, and increasing numbers of women are attending.

THE MATHARI MENTAL HOSPITAL.

THE CARE AND TREATMENT OF AMENTS AND OF PATIENTS SUFFERING FROM MENTAL DISORDERS.

During the year a commencement was made with the building of a second new ward to accommodate about thirty patients. Useful, however, as this addition will be it does not represent more than a very small step towards what is required and the need for further and new accommodation to replace almost all of the old buildings and the need for facilities for diagnosis and treatment remain almost as great as ever. Apart, however, from the difficulties of accommodation and the difficulties of providing treatment the institution continues to be excellently administered.

The following note summarizes the work of the year :—

DEATHS  
PERCENTAGE OF DEATHS TO TOTAL OF PATIENTS, 1927 TO 1934

YEAR				Patients	Deaths	Percentage
1927	..	..	..	204	32	15·7
1928	..	..	..	225	23	10·2
1929	..	..	..	250	25	10
1930	..	..	..	278	34	13·6
1931	..	..	..	236	38	16
1932	..	..	..	167	10	6
1933	..	..	..	153	5	3·26
1934	..	..	..	199	14	7·03

DISCHARGES, 1934					
European	..	..	2 Males	3 Females	
Asian	..	..	1 Male	5 Females	
African	..	..	32 Males	6 Females	

GENERAL STATISTICS.

The following table shows the number of admissions, discharges, and deaths for the past three years, 1932, 1933, and 1934.

			ADMISSIONS			DISCHARGES			DEATHS		
			1932	1933	1934	1932	1933	1934	1932	1933	1934
Males	..	..	37	27	55	36	12	34	8	5	12
Females	..	..	6	14	16	9	7	15	2	—	2
TOTAL	..		43	41	71	45	19	49	10	5	14

The total number of patients treated during the year was 199.

Males	...	...	...	...	...	148
Females	...	...	...	...	...	51

The total number of patient days in hospital were :—

						1932	1933	1934
European—Male and Female	..	..	..			2,812	2,167	1,974
Native—Male	..	..	..	..	..	30,874	30,351	33,468
Native—Female	..	..	..	..	..	10,318	10,549	12,435
TOTAL	..					44,004	43,067	47,877

				1932	1933	1934
The average daily number was	..	..	..	121	117·99	131·16
Remaining at the end of 1932	..	112				
Remaining at the end of 1933	..	128 Male and Female, All Races—(Males 93, Females 35).				
Remaining at the end of 1934	..	136—Males 101, Females 35.				

European Section.

The total number treated during 1934 was 10. The details are :—

	Males	Females
Remaining from 1933 .. ..	4	2
Admitted during 1934 .. ..	2	2
Discharged during 1934 .. ..	2	3
Deaths during 1934 .. ..	1	—
Remaining at end of 1934 .. ..	3	1

TOTAL NUMBER OF DAYS RESIDENCE IN HOSPITAL :—

	1934
Of those discharged .. ..	1,179
Of those died .. ..	335
Of those remaining .. ..	8,727
TOTAL ..	10,241

Asiatic Section.

The total number treated during the year 1934 was 10. The details are :

	Males	Females
Remaining from 1933 .. ..	2	2
Admitted during 1934 .. ..	1	5
Discharged during 1934 .. ..	1	5
Died during 1934 .. ..	—	—
Remaining at end of 1934 .. ..	2	2
Indian Male .. .. 1		
Goan Male .. .. 1		
Indian Female .. .. 1		
Seychelle Female .. .. 1		
Total .. 4		

Total number of days residence in hospital of :—

Those discharged during 1934.. ..	342
Those remaining at end of 1934 .. ..	13,297
Those who died during 1934 .. ..	Nil
Total ..	13,639

African Section.

The total number treated during the year was 179. The details are :—

	Males	Females
Remaining from 1933 .. ..	87	31
Admitted during 1934 .. ..	52	9
Discharged during 1934 .. ..	32	6
Died during 1934 .. ..	11	2
Remaining at end of 1934 .. ..	96	32

The total number of days of these were :—

	Males	Females
Those discharged during 1934.. ..	10,386	1,515
Those remaining at end of 1934 .. ..	118,867	60,861
Those who died in 1934 .. ..	5,060	2,288
Total ..	134,313	64,664

Patients were admitted during the year from the following places :—

						Males	Females
Nairobi	..	..	..	..	..	19	6
Nyeri	..	..	..	..	..	2	—
Eldoret	..	..	..	..	..	4	4
Kisumu	..	..	..	..	..	8	2
Nakuru	..	..	..	..	..	2	—
Kisii	..	..	..	..	..	2	1
Fort Hall	..	..	..	..	..	1	1
Kapsabet	..	..	..	..	..	1	—
Kakamega	..	..	..	..	..	1	1
Thika	..	..	..	..	..	1	—
Meru	..	..	..	..	..	1	—
Kiambu	..	..	..	..	..	1	—
Mombasa	..	..	..	..	..	6	—
Embu	..	..	..	..	..	1	1
Machakos	..	..	..	..	..	2	—
Lamu	..	..	..	..	..	1	—
Kericho	..	..	..	..	..	2	—
Total						55	16

MEDICAL WORK CARRIED OUT BY MISSIONARY SOCIETIES.

The number of hospital beds maintained by the Missionary Societies receiving medical grants from Government, the numbers of patients treated in these institutions, and the amounts of the grants given are shown in the folowing tables :—

MISSIONS	Place			No. of beds	In- patients	Out- patients	Out-dis- pensary patients	Con- finements	Amount of grant
C.S.M.	..	Kikuyu	..	87	1,182	12,796	Nil	122	£ 450
„	..	Chogoria	..	63	618	13,054	12,000*	17	240
„	..	Tumutumu	..	98	1,434	22,278	25,470	306	1,050
C.M.S.	..	Kaloleni	..	96	788	15,336	1,772	5	940
„	..	Maseno	..	69	1,522	12,246	21,548	131	420
S.D.A.	..	Kendu	..	60	519	23,635	2,600*	60	400
M.M.S.	..	Meru	..	20	77	21,869	25,047	11	100
N.M.S.	..	Ngao	..	25	1,170	—	—	20	100

\*Approximately.

- C.S.M.—Church of Scotland Mission.
- C.M.S.—Church Missionary Society.
- S.D.A.—Seventh Day Adventists.
- N.M.S.—Neukirchen Mission Society.
- M.M.S.—Methodist Missionary Society.

At all the above-mentioned hospitals a qualified medical practitioner and one or more European sisters are employed.

VII.—PRISONS AND ASYLUMS.

The vital statistics for the prisons of the Colony for 1934 and for the last four years are as follows :—

YEAR			Daily Average in Prison	Admissions to Hospital	Daily Average on Sick List	Percentage of Total Inmates	Deaths
1934	..	..	3,439	4,180	152	<i>Per cent</i> 3·3	95
1933	..	..	2,893	2,967	112	3·9	41
1932	..	..	2,642	1,882	93	3·5	33
1931	..	..	2,508	1,612	90	3·6	56
1930	..	..	2,380	1,729	95	4·0	29

From these figures it would appear :—

- (a) That the sick rate has decreased from 39 per thousand in 1933 to 33 per thousand in 1934.

- (b) That the death rate has increased from 14 per thousand in 1933 to 27 per thousand in 1934.

The death rate in English convict prisons in 1931 was as I noted in my Report for 1933 only 8.2 per thousand, and, as I then said, compared with that figure, the Kenya rate in 1933 was undoubtedly high. The death rate in Kenya prisons in 1934 was, however, 27 per thousand, or almost twice that for Kenya prisons in 1933 and more than three times that for English convict prisons in 1931.

Such a death rate can only be described as highly unsatisfactory and the explanation is not far to seek.

In the Annual Medical Report for 1933 I noted in discussing this question that : "In the Kenya prisons the first of these conditions (i.e. certain conditions responsible for a high death rate), namely, overcrowding, prevails, to a very serious degree", and I observed that having consideration of the fact that in Kenya each prisoner had on an average only 25 square feet of floor space, a death rate of 14.1 per thousand might not in the circumstances be considered high. Adopting the same line of argument it might be said with regard to the year 1934 that having regard to the fact that whereas in 1933 with an average provision of 25 square feet per prisoner the death rate was only 14.1 per thousand it is not remarkable that in 1934 the death rate should have increased by a little short of 100 per cent, even though overcrowding had only increased to the extent indicated by the fact that in the latter year 3,196 prisoners (on an average), had to be accommodated in the prisons as against 2,893 in the preceding year. If it were to be so argued it would be difficult to prove that the argument was unjustifiable, for it is undoubtedly the case that there is a point at which overcrowding becomes so serious that a very small increase in overcrowding will result in a great increase of the mortality rate, and the record of the year 1934 would appear to show that this point had, as was suggested in the report for 1933, already been reached in that year.

This question of overcrowding, serious as it is, is of course capable of solution by simple means, namely by the provision of more accommodation, in other words, there is to the problem of overcrowding so far as it is a sanitary one, a very simple sanitary answer. But to my mind there may be a medical as well as a sanitary problem to be solved. From the Annual Report of the Commissioner of Prisons for 1934 I gather that not only has the total number of persons requiring to be dealt with by the Prisons Department increased by 18 per cent in the past year, but that it has increased by nearly 100 per cent in the past four years. Such an increase is truly remarkable, and having regard to the very well established fact that the mental capacity and physical condition of convicts in England are, on the average, well below the average standards for the population as a whole, the question at once arises whether among others, some medical issue of great importance is not at stake. Whether that may be so or not we cannot say for at the present moment we know practically nothing of the physical and mental condition of those who are committed to prison in this Colony.

In Kenya the daily average of the population of the various prisons of the Colony during 1934 was 3,518, and at the Nairobi Prison alone was 1,047. At Wormwood Scrubbs where the daily average of population is about 1,000 the medical staff consists of five full time medical officers. At Nairobi with a larger population the medical staff consists of one Asian Sub-Assistant Surgeon supervised so far as his other duties may allow by one of the Medical Officers from the Native Hospital.

In addition to the 18,651 persons committed to prison in 1934, 22,201 persons were committed to detention camps and 35 juveniles to "approved schools".

I do not propose in this Report to enter into details with regard to such matters as water supplies, dieteries or refuse disposal. These matters compared with the larger issue which appears to me to be at stake are details,

for it is happily the case that the prison administration in so far as the funds and advice at its disposal allow gives meticulous attention to them. One at least of the main issues at stake is a much larger and more important one, namely, what were the mental and physical conditions of these 40,000 odd Africans who in the year now under review came for one reason or another under the care of the Prisons Department? The answer to this question could only have been supplied as the result of much careful investigation by officers with a medical and psychological training. That such investigation is regarded as necessary and desirable in England is clearly shown by the fact that at Wormwood Scrubbs as I have said, there is a full time staff of five specialist medical officers for a population of only 1,000. In Kenya where committals number over 40,000, there is no routine specialist medical service available.

I am of course well aware that in Kenya funds are short indeed and that many services cannot on that account be undertaken, but with regard to this question of "crime" the apparent increase has of recent years been so great that it is impossible to avoid the question whether in the interests of economy alone expenditure on medical investigation is not now absolutely essential.

### VIII.—METEOROLOGY.

The statistics supplied by the Director of the British East African Meteorological Service are contained in Table IV appended to this Report.

A. R. PATERSON,  
*Director of Medical Services.*

RETURNS.  
TABLE I.  
MEDICAL STAFF.

A. R. Paterson, Director of Medical Services.						
F. J. Carlyle Johnstone, Deputy Director of Medical Services.						
Senior Medical Officers	...	...	...	...	...	5
Surgical Specialist	...	...	...	...	...	1
Medical Officers	...	...	...	...	...	36
Health Officers	...	...	...	...	...	4
Matron	...	...	...	...	...	2
Nursing Sisters and Health Visitors	...	...	...	...	...	52
Sanitary Inspectors	...	...	...	...	...	13
Assistant Surgeons, European	...	...	...	...	...	2
Assistant Surgeons, Asiatic	...	...	...	...	...	1
Sub-Assistant Surgeons (4 in abeyance)	...	...	...	...	...	24

PRINCIPAL CHANGES.

- (1) Dr. J. C. J. Callanan to be Senior Medical Officer from 16th January, 1934.
- (2) Dr. C. V. Braimbridge to be Surgical Specialist from 1st January, 1934.

Resignations.

Nursing Sisters, 3 ; Clerk, European, 1.

Appointments Terminated.

Sanitary Inspectors, 2 ; Clerks (Non-European), 2.

TABLE II.  
Financial.

The sanctioned Medical Budget for the year 1934 was a total of £201,876 as compared with £215,166 for the preceding twelve months.

The headings under which the vote was arranged were as follows :—

MEDICAL DEPARTMENT

		Estimates	Actual Expenditure
		£	£
ADMINISTRATIVE DIVISION—Personal Emoluments	..	10,415	10,863
MEDICAL DIVISION—Personal Emoluments	.. ..	27,311	27,651
SANITATION DIVISION—Personal Emoluments	.. ..	7,544	6,895
LABORATORY DIVISION—Personal Emoluments	.. ..	13,932	13,180
“ “ Other Charges	.. ..	26,813	25,242
	£	86,015	83,831
NATIVE SERVICES—Personal Emoluments	.. ..	70,635	68,302
“ “ Other Charges	.. ..	44,636	45,834
	£	115,271	114,136
EXTRAORDINARY EXPENDITURE	.. ..	590	648

The total amount of revenue collected was as follows :—

	£	£
Hospital Fees .. .. .	7,451	
Bills of Health .. .. .	798	
Infectious Diseases Hospital, Fees, Nairobi Municipality	605	
Infectious Diseases Hospital, Fees, Mombasa Municipality	173	
Fees from Medical Research Laboratory .. .. .	1,412	
Fees from Government Analyst .. .. .	30	
Registration Fees .. .. .	79	
Sales of Medicines, etc. .. .. .	1,852	
Hire of Government Motor Vehicles (Ambulances) ..	61	
	<hr/>	12,461
Reimbursement from Uganda Government on Account of Zanzibar Sanitary Station .. .. .	425	
Reimbursement from Kenya and Uganda Railways and Harbours on Account of Medical Services .. .. .	5,148	
Reimbursement on Account of Messing Expenses, Euro- pean Hospital, Nairobi .. .. .	486	
	<hr/>	6,059
		<hr/>
		£ 18,520
		<hr/>

Last year the total revenue collected amounted to £17,597.

**TABLE III.**  
Return of Statistics of Population for the Year 1933.

COLONY AND PROTECTORATE OF KENYA	Europeans and Whites	Africans and Others	Asiatics
Number of inhabitants in 1933 ..	*16,812	Africans— 3,017,117 Arabs and Others ‡13,512	Indians—†39,644 Goans—‡3,979
Number of births registered in 1934	301	45	Indians—279 Goans—70
Number of deaths registered in 1934	130	1,294	Indians—362 Goans—24
Number of immigrants during 1934	4,996	1,825	Indians—7,403 Goans—780
Number of emigrants during 1934	4,923	1,736	Indians—6,552 Goans—752
Number of inhabitants during 1934	No figures available beyond 1931 Census	§3,024,975	No figures available beyond 1931 Census

\*1931 Census. †Estimated 31-12-33. ‡1931 Census. §Estimated 31-12-34

**TABLE IV.**  
Meteorological Return for the Year 1933.

MONTH.	TEMPERATURE			RAINFALL		WINDS	
	Shade Max. (Mean)	Max. and Min. (mean)	Shade Minimum (Mean)	Amount Rain Inches	Humidity.	GEN. Dir. 8.30 a.m.	Force 1-10 8.30 a.m.
<b>MOMBASA OBSERVATORY</b>							
January .. ..	86.3	80.5	74.6	1.20	75%	NNW	2.9
February .. ..	88.5	82.2	75.9	0.11	70	NW by N	2.7
March .. ..	91.7	84.9	78.2	0.99	74	NNW	1.7
April .. ..	90.5	84.1	77.8	2.37	77	S by W	1.9
May .. ..	83.8	78.7	73.6	21.74	87	SW by W	2.0
June .. ..	82.1	77.2	72.3	13.68	84	W by N	2.0
July .. ..	81.4	76.5	71.5	10.22	83	W by S	2.1
August .. ..	82.3	76.9	71.4	2.91	81	WSW	2.5
September .. ..	84.0	78.3	72.5	1.55	81	WSW	2.7
October .. ..	85.6	79.8	74.0	3.23	78	WSW	1.7
November .. ..	89.3	82.3	75.2	1.10	71	Calm	0.2
December .. ..	88.8	82.5	76.3	3.10	76	Calm	0.0
YEAR AVERAGE ..	86.2	80.3	74.4	62.20	78	W by S	1.9
<b>KISUMU, MARINE DEPARTMENT</b>							
January .. ..	81.4	72.0	62.6	0.12	50%	E by N	2.7
February .. ..	83.5	73.7	64.0	0.83	55	ESE	2.5
March .. ..	81.4	73.1	64.9	2.39	65	NE	2.6
April .. ..	80.8	73.1	65.5	6.52	70	SE	2.3
May .. ..	80.1	72.0	63.9	3.92	72	SE by E	2.1
June .. ..	79.5	71.5	63.6	1.28	70	SE by E	2.0
July .. ..	78.3	71.1	63.8	1.69	71	SE by E	2.0
August .. ..	79.3	71.3	63.3	5.95	70	SE by E	2.0
September .. ..	81.9	72.1	62.3	1.21	55	SE by S	2.0
October .. ..	82.4	73.3	64.3	4.70	62	SSE	1.7
November .. ..	82.3	73.1	64.0	4.64	66	ESE	1.8
December .. ..	81.3	72.1	63.0	2.40	64	ESE	1.8
YEAR AVERAGE ..	81.0	72.4	63.8	35.65	64	SE by E	2.1

## METEOROLOGICAL RETURNS—Contd.

MONTH	TEMPERATURE			RAINFALL		WINDS	
	Shade Max. (mean)	Max. and Min. (mean)	Shade Minimum (mean)	Amount Rain Inches	Humidity	GEN. Dir. 8.30 a.m.	Force 1-10 8.30 a.m.
KABETE OBSERVATORY							
January .. ..	76·6	64·5	52·3	0·38	59%	NE by E	2·3
February .. ..	79·3	66·6	53·8	0·96	61	NE	2·4
March .. ..	78·1	67·3	56·5	1·61	71	NE by E	2·4
April .. ..	74·8	66·5	58·3	3·73	86	ENE	2·1
May .. ..	69·4	62·7	56·1	7·93	90	ESE	1·6
June .. ..	68·0	61·3	54·7	2·24	90	SE by E	1·1
July .. ..	68·2	60·9	53·6	1·24	87	SSE	1·1
August .. ..	67·3	60·0	52·7	0·40	87	SE	1·5
September .. ..	74·3	63·6	52·9	0·03	79	SE by E	1·5
October .. ..	74·5	65·2	55·9	2·72	81	ENE	2·1
November .. ..	74·1	65·5	57·0	1·80	82	NE by E	2·2
December .. ..	73·6	64·6	55·6	2·46	77	ENE	2·0
YEAR AVERAGE ..	73·2	64·1	54·9	25·50	79	E by N	1·9
NAIROBI, K.U.R.							
January .. ..	81·4	68·1	54·8	0·08	60	NE by E	2·8
February .. ..	83·8	69·6	55·4	1·78	60	ENE	2·1
March .. ..	82·4	70·1	57·9	0·61	71	ENE	1·7
April .. ..	79·5	69·8	60·1	3·10	81	E by N	2·3
May .. ..	73·3	65·7	58·0	6·00	88	SE by E	1·8
June .. ..	72·4	64·5	56·6	0·97	85	S by E	1·6
July .. ..	72·8	64·3	55·8	0·57	82	SSW	1·8
August .. ..	71·9	62·9	54·0	0·28	82	S by E	2·4
September .. ..	78·9	66·9	55·0	0·00	76	E by S	2·0
October .. ..	78·7	68·3	57·8	1·83	82	ENE	2·7
November .. ..	78·3	68·9	59·5	2·42	79	E by N	2·7
December .. ..	77·4	67·5	57·6	1·78	75	ENE	2·2
YEAR AVERAGE ..	77·6	67·2	56·9	19·42	77	E by N	2·2

TABLE SHOWING ANNUAL RAINFALL RECORDED AT VARIOUS POINTS IN THE DIFFERENT AREAS FOR THE YEAR 1934.

COAST AREA.			MOUNTAINOUS AREA—(Contd.).		
STATION.	1934.		STATION	1934.	
	Rainfall in			Rainfall in	
Malindi, D.C. ..	55·81	inches	Nakuru, K.U.R. ...	22·41	inches
Mombasa Observatory ..	62·20	"	Molo, K.U.R. ..	35·39	"
Mazeras, K.U.R. ..	30·63	"	Eldama Ravine, closed		
Mackinnon Road, K.U.R.	45·61	"			
Voi, K.U.R. ..	8·73	"			
Taveta, Col. Homer ..	15·89	"			
MOUNTAINOUS AREA.			NYANZA AND KENYA PROVINCE.		
	Rainfall in			Rainfall in	
Masongaleni, K.U.R. ..	9·45	inches	Lumbwa, K.U.R. ..	34·17	inches
Makindu, K.U.R. ..	2·65	"	Muhuroni, K.U.R. ..	47·00	"
Athi River, K.U.R. ..	12·16	"	Kisumu, Marine Depart-		
Kiu, K.U.R. ..	13·54	"	ment .. ..	35·65	"
Nairobi, K.U.R. ..	19·42	"	Mumias, Kakamega D.C.	66·27	"
Kabete Reformatory,			Kericho, D.C. ..	59·25	"
(Near Nairobi) ..	28·35	"	Nandi, Kipkarren Est. ..	47·13	"
Naivasha, K.U.R. ..	17·87	"	Fort Hall, D.C. ..	38·20	"
			Nyeri, D.C. ..	33·69	"
			West Kenya, "Karameno,"		
			(Naro Moru) ..	22·36	"

TABLE V.  
COLONY AND PROTECTORATE OF KENYA  
RETURN OF DISEASES (In-Patients)  
For the Year 1934

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION (NON-OFFICIAL)				NON-EUROPEAN OFFICIALS (including ASIATICS)				NATIVE GENERAL POPULATION (including ASIATICS)			
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES.																
1. Enteric Group—																
(a) Typhoid Fever	..	5	..	5	1	1	13	1	14	1	2	147	45	150	6	
(b) Paratyphoid A.	..	4	..	4	..	..	1	..	1	..	..	4	..	4	..	
(c) Paratyphoid B.	..	1	..	1	..	..	..	..	..	..	..	2	..	2	..	
(d) Type not defined	1	..	..	1	..	..	1	..	..	..	..	13	2	13	1	
T. A. B. reaction	..	..	..	..	..	..	4	..	4	..	..	..	..	..	..	
2. Typhus ..	..	1	..	1	..	..	..	..	..	..	..	7	1	7	..	
3. Relapsing Fever ..	..	..	..	..	..	..	..	..	..	..	..	124	4	124	3	
4. Undulant Fever ..	..	2	..	2	..	..	..	..	..	..	..	3	1	3	..	
5. Malaria—Clinical	1	76	..	77	..	1	86	..	87	..	2	2,467	14	2,509	54	
(a) Tertian ..	..	9	..	9	..	..	5	..	5	..	..	271	..	272	5	
(b) Quartan ..	..	4	..	4	..	1	4	1	5	..	..	208	6	212	4	
(c) Aestivo-autumnal	..	145	..	145	..	2	137	3	139	1	..	3,479	85	3,513	36	
(d) Undifferentiated	..	9	..	9	..	..	..	..	..	..	..	41	11	41	..	
(e) Cachexia ..	..	..	..	..	..	..	1	..	1	..	..	28	1	30	..	
(f) Blackwater ..	..	3	..	3	..	..	12	4	12	..	1	15	6	25	1	
Cerebral ..	..	1	1	1	..	..	..	..	..	..	..	17	18	17	..	
6. Smallpox ..	..	..	..	..	..	..	3	..	3	..	..	7	3	7	..	
Alastrim—Vaccinia	..	..	..	..	..	..	..	..	..	..	..	8	..	8	..	
7. Measles ..	..	2	..	2	..	..	11	..	11	..	16	397	1	413	1	
8. Scarlet Fever	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	
9. Whooping Cough	..	..	..	..	..	..	..	..	..	..	7	103	11	110	4	
10. Diphtheria..	..	..	..	..	..	..	2	1	2	..	1	5	1	6	..	
11. Influenza ..	..	189	..	189	..	1	65	1	65	1	25	1,414	14	1,439	26	
12. Miliary Fever ..	..	13	..	13	..	..	2	..	2	..	3	200	..	203	2	
13. Mumps ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
14. Cholera ..	..	..	..	..	..	..	..	..	..	..	..	2	1	2	..	
15. Epidemic Diarrhoea	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
16. Dysentery—																
(a) Amoebic ..	1	30	..	31	2	..	31	..	31	..	16	299	14	315	15	
(b) Bacillary ..	..	5	..	5	..	1	21	..	22	..	7	179	15	186	1	
(c) Undefined or due to other causes ..	1	5	..	6	..	..	11	..	11	..	6	386	43	392	7	

RETURN OF DISEASES—IN-PATIENTS—(Contd.).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—(Contd.).																				
17. Plague—																				
(a) Bubonic ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	2	..
(b) Pneumonic ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(c) Septicæmic ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
(d) Undefined ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18. Yellow Fever ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19. Spirochaetosis ictero-hæmorrhagica ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	114	99	1	213	106
20. Leprosy ..	..	2	..	2	..	..	1	..	1	..	..	..	..	..	..	..	12	3	12	..
21. Erysipelas ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	1
22. Acute Poliomyelitis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	2	11	..
23. Encephalitis Lethargica ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	61	46	61	3
24. Epidemic Cerebro-spinal Fever..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25. Other Epidemic Diseases—																				
(a) Rubella (German Measles)	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	25	..	3	707	17
(b) Varicella (Chicken-pox) ..	..	1	..	1	1	..	6	..	6	..	..	3	..	3	1	..	682	..	2	..
(c) Kala-azar ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
(d) Phlebotomus Fever ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(e) Dengue ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(f) Epidemic Dropsy ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(g) Yaws ..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	46	630	7	676	33
(h) Trypanosomiasis ..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	2	14	2	16	..
26. Glanders ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2	..
27. Anthrax ..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	3	72	7	75	4
28. Rabies ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	12	4	16	..
29. Tetanus ..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	1	26	10	27	1
30. Mycosis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3	..
31. Tuberculosis, Pulmonary and Laryngeal ..	..	1	..	1	..	..	..	..	..	..	..	1	..	1	..	53	456	136	509	36
32. Tuberculosis of the Meninges or Central Nervous System ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	14	5	15	4
33. Tuberculosis of the Intestines or Peritoneum ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	6	14	..

RETURN OF DISEASES—IN-PATIENTS—(Contd.).

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40

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION (NON-OFFICIAL)				NON-EUROPEAN OFFICIALS (including ASIATICS)				NATIVE GENERAL POPULATION (including ASIATICS)			
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—(Contd.).																
34. Tuberculosis of the Vertebral Column .. ..	..	..	..	..	..	..	..	..	..	..	2	19	3	21	2	
35. Tuberculosis of Bones and Joints .. ..	..	..	..	..	..	..	..	..	..	..	10	59	6	69	7	
36. Tuberculosis of other Organs— (a) Skin or Subcutaneous Tissue (Lupus) .. ..	..	..	..	..	..	..	..	..	..	..	1	3	..	4	2	
(b) Bones .. ..	..	..	..	..	..	..	..	..	..	..	1	25	1	26	8	
(c) Lymphatic System .. ..	..	..	..	..	..	..	..	..	..	..	11	79	6	90	16	
(d) Genito-urinary .. ..	..	..	..	..	..	..	..	..	..	..	..	3	2	3	..	
(e) Other Organs .. ..	..	..	..	..	..	..	..	..	..	..	..	10	..	10	1	
37. Tuberculosis disseminated— (a) Acute .. ..	..	..	..	..	..	..	..	..	..	..	..	3	3	3	..	
(b) Chronic .. ..	..	..	..	..	..	..	..	..	..	..	..	5	..	5	..	
38. Syphilis— (a) Primary .. ..	..	..	..	..	..	..	..	..	..	..	53	642	..	695	41	
(b) Secondary .. ..	..	..	..	..	..	..	..	..	..	..	14	257	3	271	12	
(c) Tertiary .. ..	..	..	..	..	..	..	1	..	1	..	3	78	4	81	8	
(d) Hereditary .. ..	..	..	..	..	..	..	..	..	..	..	3	74	19	77	2	
(e) Period not indicated .. ..	..	..	..	..	..	..	..	..	..	..	20	423	5	443	35	
Cerebral .. ..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	
Priapism .. ..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	
39. Soft Chancre .. ..	..	..	..	..	..	..	..	..	..	..	2	15	..	17	..	
40. A.—Gonorrhœa and its compli- cations .. ..	..	..	2	..	2	..	2	..	2	..	47	909	2	956	44	
B.—Gonorrhœal Ophthalmia .. ..	..	..	..	..	..	..	..	..	..	..	..	7	..	7	..	
C.—Gonorrhœal Arthritis .. ..	..	..	..	..	..	..	..	..	..	..	1	9	..	10	1	
D.—Granulomo Venereum .. ..	..	..	1	1	1	..	1	..	1	..	..	2	..	2	1	
41. Septicæmia .. ..	..	..	..	..	..	..	..	..	..	..	..	18	12	18	2	
42. Other Infectious Diseases .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Pyæmia .. ..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	
II.—GENERAL DISEASES NOT MENTIONED ABOVE.																
43. Cancer or other Malignant Tu- mours of the Buccal Cavity .. ..	..	..	..	1	..	..	..	..	..	..	..	8	2	8	..	
44. Cancer or other Malignant Tu- mours of the Stomach or Liver .. ..	..	2	..	..	..	..	..	..	..	..	1	25	11	26	2	

## RETURN OF DISEASES IN PATIENTS—(Contd.).

[illegible]

RETURN OF DISEASES—IN-PATIENTS—(Contd.).

M E D

42

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION (Non-Official)				NON-EUROPEAN OFFICIALS (including ASIATICS)				NATIVE GENERAL POPULATION (including ASIATICS)			
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	
II.—GENERAL DISEASES NOT MENTIONED ABOVE—(Contd.).																
63. Diseases of the Supra-renal Glands .. ..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	2	
64. Diseases of the Spleen ..	..	..	..	..	..	..	..	..	6	..	..	50	..	1	53	
65. Leukæmia—	..	..	..	..	..	..	..	..	..	..	..	5	..	..	1	
(a) Leukæmia .. ..	..	..	..	..	..	..	..	..	..	..	..	3	..	1	3	
(b) Hodgkin's Disease..	..	1	..	1	..	..	..	..	..	..	..	5	..	5	..	
66. Alcoholism .. ..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	
67. Chronic poisoning by mineral substances (Lead, Mercury, etc.)	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	
68. Chronic poisoning by organic substances (Morphia, Cocaine, etc.) .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
69. Other General Diseases—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Auto-intoxication ..	..	..	..	..	..	..	..	..	..	..	..	5	..	5	..	
Purpura Hæmorrhagica..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	
Hæmophilia .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Diabetes Insipidus ..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	
Paroxysmal Hæmoglobinuria..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	2	
Migraine .. ..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	
Food Deficiency .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Acidosis .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.																
70. Encephalitis (not including Encephalitis Lethargica) ..	..	..	..	..	..	..	1	..	1	..	..	6	2	6	..	
Encephalitis Myelitis ..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	
71. Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Meningitis) ..	..	..	..	..	..	..	1	..	1	..	..	48	40	50	1	
Parkinson's Disease ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
72. Locomotor Ataxia ..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	
73. Other affections of the Spinal Cord	..	..	..	..	..	..	1	..	1	..	..	2	1	2	..	
74. Apoplexy—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
(a) Hæmorrhage ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
(b) Embolism ..	..	..	..	..	..	..	2	..	..	..	..	1	2	3	1	
(c) Thrombosis ..	..	..	..	..	..	..	1	1	..	..	..	4	2	5	..	
Cerebral ..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION (NON-OFFICIAL)				NON-EUROPEAN OFFICIALS (including ASIATICS)				NATIVE GENERAL POPULATION (including ASIATICS)			
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES—(Contd.).																
75. Paralysis—																
(a) Hemiplegia ..	..	..	..	1	..	..	1	..	1	..	4	10	3	14	1	
(b) Other Paralyses ..	..	..	..	..	..	..	..	..	..	..	6	35	2	41	..	
76. General Paralysis of the Insane..	..	..	..	10	..	..	1	..	1	..	128	174	13	302	134	
77. Other forms of Mental Alienation	..	..	..	1	..	..	..	..	..	..	5	51	1	56	5	
78. Epilepsy ..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	
79. Eclampsia Convulsions (non- puerperal), 5 years or over ..	..	..	..	2	..	..	..	..	..	..	..	15	6	15	..	
80. Infantile Convulsions ..	..	..	..	1	..	..	..	..	..	..	..	3	..	3	..	
81. Chorea ..	..	..	..	8	..	..	..	..	4	..	1	21	..	21	..	
82. A.—Hysteria ..	..	2	..	6	..	..	4	..	9	..	..	27	..	28	1	
B.—Neuritis ..	..	5	..	1	..	..	11	..	11	..	1	83	..	84	..	
C.—Neurasthenia..	..	4	..	1	..	..	2	..	2	..	..	..	..	..	..	
Neuralgia ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Insomnia ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
83. Cerebral Sftotening ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
84. Other affections of the Nervous System, such as Paralysis																
Agitans ..	..	1	..	..	..	..	..	..	..	..	3	41	2	44	..	
85. Affections of the Organs of Vision																
(a) Conjunctivitis ..	..	1	..	2	..	..	11	..	11	..	5	351	..	356	9	
(b) Trachoma ..	..	..	..	3	..	..	11	..	11	..	1	39	..	40	3	
(c) Tumours of the Eye ..	..	..	..	..	..	..	7	..	7	..	..	15	..	15	1	
(d) Other affections of the Eye	..	4	..	8	..	..	4	..	4	..	17	214	1	231	10	
86. Affections of the Ear or Mastoid																
Sinus ..	..	1	..	7	1	..	8	..	8	..	2	131	3	133	4	
Concussion ..	..	1	..	3	1	..	..	..	..	..	..	2	..	2	..	
Sciatica ..	..	2	..	..	..	..	..	..	..	..	..	8	..	8	..	
Insomnia ..	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	
Cerebral Haemorrhage ..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	
Cerebral Abscess ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM.																
87. Pericarditis ..	..	..	..	..	..	..	..	..	..	..	..	3	1	3	1	
88. Acute Endocarditis or Myocar- ditis ..	..	1	..	..	..	..	..	..	..	..	..	3	2	3	..	
89. Angina Pectoris ..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	

### RETURN OF DISEASES--IN-PATIENTS--(Contd.).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)					
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM—(Contd.).																					
90. Other Diseases of the Heart—																					
(a) Valvular—																					
Mitral ..	..	2	..	2	7	..	7	2	7	..	..	..	..	..	..	..	13	4	13	..	
Aortic ..	..	3	..	3	2	..	2	..	2	..	..	..	..	..	..	..	19	12	20	..	
Tricuspid ..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	38	6	38	..	
Pulmonary ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	4	10	..	
(b) Myocarditis ..	1	..	..	1	2	..	2	1	2	..	..	..	..	..	..	..	..	..	..	..	
91. Diseases of the Arteries—																	15	10	15	..	
(a) Aneurism ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	1	5	2	
(b) Arterio-sclerosis ..	..	..	..	..	..	..	2	2	2	..	..	..	..	..	..	..	2	..	2	1	
(c) Other Diseases ..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
92. Embolism or Thrombosis (non-cerebral) ..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	1	1	1	..	
93. Diseases of the Veins—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Hæmorrhoids ..	..	3	..	3	4	..	4	..	4	..	1	..	..	..	..	..	12	..	13	..	
Varicose Veins ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	
Phlebitis ..	..	1	..	1	3	..	3	..	3	..	..	..	..	..	..	..	3	..	3	..	
94. Diseases of the Lymphatic System—	..	2	..	2	..	..	3	2	3	..	..	..	..	..	..	..	6	..	7	..	
Lymphangitis ..	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	..	9	..	11	1	
Lymphadenitis, Bubo (non-specific) ..	..	..	..	..	..	..	7	..	7	..	2	..	..	2	..	12	159	..	171	8	
Adenitis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	
95. Hæmorrhage of undetermined cause ..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	4	1	4	..	
96. Other affections of the Circulatory System ..	..	1	..	1	1	..	1	..	1	..	3	..	..	3	..	2	12	2	14	..	
Epistaxis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	7	..	
Pink Disease ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM.																					
97. Diseases of the Nasal Passages—	..	3	..	3	..	..	9	..	9	..	..	..	..	..	..	1	22	..	23	..	
Adeniods ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Polypus ..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	3	..	4	..	
Rhinitis ..	..	2	..	2	..	..	..	..	..	..	1	..	..	1	..	..	3	..	4	..	
Coryza ..	..	12	..	12	10	..	10	..	10	..	23	..	..	23	..	..	57	..	57	2	
Sinusitis ..	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM—(Contd.).																				
98. Affections of the Larynx—																				
Laryngitis .. ..	..	2	..	2	..	..	..	..	..	..	..	1	..	..	..	1	36	7	37	..
99. Bronchitis—																				
(a) Acute .. ..	..	19	..	19	..	23	..	..	23	..	..	39	..	..	..	26	993	9	1,019	28
(b) Chronic .. ..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	6	129	5	135	5
100. Broncho-pneumonia ..	..	2	..	2	..	3	..	..	3	..	..	2	..	..	..	13	462	135	475	14
101. Pneumonia—																				
(a) Lobar .. ..	..	3	..	3	..	10	..	..	10	..	..	5	..	..	..	56	1,705	411	1,761	61
(b) Unclassified .. ..	..	3	..	3	..	2	..	..	2	..	..	..	..	..	..	19	308	74	327	8
102. Pleurisy, Empyema ..	..	1	1	1	..	2	..	..	2	..	..	2	..	..	..	7	75	5	82	2
103. Congestion of the Lungs ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	21	..	23	..
104. Gangrene of the Lungs..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
105. Asthma .. ..	..	3	..	3	..	5	..	..	5	..	..	12	..	..	1	..	61	..	62	4
106. Pulmonary Emphysema ..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	1	1	..	1	..
107. Other affections of the Lungs ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	1	18	2
Pulmonary Spirochaetosis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pleurodynia .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
F.B. in Bronchus .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
VI.—DISEASES OF THE DIGESTIVE SYSTEM.																				
108. A.—Diseases of Teeth or Gums—																				
Caries .. ..	..	1	..	1	..	5	..	..	5	..	..	2	..	..	..	..	16	..	16	..
Pyorrhœa .. ..	..	5	..	5	..	4	..	..	4	..	..	26	..	..	1	1	48	..	49	1
B.—Other affections of the Mouth ..	..	1	..	1	..	..	..	..	..	..	..	8	..	..	..	..	20	..	21	2
Stomatitis .. ..	..	1	..	1	..	..	..	..	..	..	..	4	..	..	..	..	1	..	1	..
Glossitis .. ..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	88	6	88	2
109. Affections of the Pharynx or Tonsils—																				
Quinsy .. ..	..	3	..	3	..	17	..	..	17	..	..	..	..	..	..	..	2	..	2	..
Tonsillitis .. ..	..	33	..	34	..	65	..	..	65	..	..	1	..	..	..	..	204	3	209	..
Pharyngitis .. ..	..	3	..	3	..	2	..	..	2	..	..	11	..	..	..	2	54	..	56	..

RETURN OF DISEASES—IN-PATIENTS—(Contd.)

M E D

46

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION (NON-OFFICIAL)				NON-EUROPEAN OFFICIALS (including ASIATICS)				NATIVE GENERAL POPULATION (including ASIATICS)			
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	
VI.—DISEASES OF THE DIGESTIVE SYSTEM—(Contd.).																
110. Affections of the Oesophagus ..	..	1	..	1	..	1	4	..	5	..	..	4	..	4	..	
111. A.—Ulcer of the Stomach ..	..	2	..	2	..	..	1	..	1	..	..	5	1	6	..	
B.—Ulcer of the Duodenum ..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	
112. Other affections of the Stomach—	..	2	..	2	..	..	4	..	4	..	..	..	..	..	..	
Gastritis ..	..	12	..	12	..	..	8	..	8	..	..	47	1	48	1	
Dyspepsia ..	..	8	..	8	..	..	16	..	16	..	..	74	..	76	4	
113. Diarrhoea and Enteritis—	..	3	..	3	..	..	12	1	12	..	..	150	26	155	..	
Under two years ..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	
114. Diarrhoea and Enteritis—	..	19	..	19	..	1	25	..	25	1	5	303	23	308	1	
Two years and over ..	1	13	..	14	..	..	..	..	..	1	..	68	..	68	..	
Colic ..	..	13	..	13	..	1	13	..	14	..	2	70	2	42	..	
Colitis ..	..	1	..	1	..	..	..	..	..	..	..	2	2	2	..	
Ulceration ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
114A. Sprue ..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	
Septic Throat ..	..	..	..	..	..	..	4	..	4	..	37	743	6	780	25	
115. Ankylostomiasis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
116. Diseases due to Intestinal Para- sites ..	..	2	..	2	..	..	3	..	3	..	12	932	..	944	12	
(a) Cestoda (Taenia) ..	..	..	..	..	..	..	..	..	..	..	1	15	..	16	..	
(b) Trematoda (Flukes) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
(c) Nematoda (other than Ankylostoma) ..	..	..	..	..	..	..	..	..	..	..	30	1	2	1	26	
Ascariis ..	..	..	..	..	..	..	..	..	..	..	..	985	..	1,015	6	
Trichocephalus dispar. ..	..	..	..	..	..	..	..	..	..	..	..	95	..	95	..	
Trichina ..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	1	
Dracunculus ..	..	..	..	..	..	..	..	..	..	..	..	23	..	23	..	
Strongylus ..	..	..	..	..	..	..	1	..	1	..	..	8	..	8	..	
Oxyuris ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
(d) Coccidia ..	..	..	..	..	..	..	..	..	..	..	2	8	1	10	1	
(e) Other Parasites ..	..	1	..	1	..	..	4	..	4	..	..	95	..	95	4	
(f) Unclassified ..	..	13	..	13	..	2	77	3	79	..	1	39	3	40	..	
117. Appendicitis ..	..	5	..	5	..	..	5	..	5	..	8	179	14	187	6	
118. Hernia ..	..	1	..	1	..	..	4	..	4	..	2	49	3	51	2	
119. A.—Affections of the Anus—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Fistula, etc. ..	..	1	..	1	..	..	4	..	4	..	..	..	..	..	..	

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION (NON-OFFICIAL)				NON-EUROPEAN OFFICIALS (including ASIATICS)				NATIVE GENERAL POPULATION (including ASIATICS)			
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year		
VI.—DISEASES OF THE DIGESTIVE SYSTEM—(Contd.).																
B.—Other affections of the In- testines—																
Enteroptosis ..	..	2	..	2	..	7	..	7	..	..	19	8	19	..		
Constipation.. ..	..	..	..	..	..	1	..	1	..	..	7	1	7	..		
120. Acute Yellow Atrophy of the Liver ..	..	..	..	..	..	8	..	8	..	..	303	..	306	2		
121. Hydatid of the Liver ..	..	..	..	..	..	..	..	..	..	..	1	1	1	..		
122. Cirrhosis of the Liver—																
(a) Alcoholic ..	..	..	..	..	..	..	..	..	..	..	1	1	1	..		
(b) Other forms ..	..	..	..	..	..	1	..	1	..	2	37	17	39	1		
123. Biliary Calculus ..	..	1	..	1	..	2	..	2	..	..	1	..	1	..		
124. Other affections of the Liver—																
Abscess ..	..	8	..	8	..	7	..	7	..	1	19	5	24	1		
Hepatitis ..	..	2	..	2	..	6	..	6	..	1	64	2	65	8		
Cholecystitis ..	..	3	..	3	..	5	..	5	..	1	17	1	17	2		
Jaundice ..	..	1	..	1	..	1	..	1	..	..	1	1	1	..		
125. Diseases of the Pancreas	..	..	..	..	..	2	..	2	..	..	17	10	18	2		
Pneumococcal Peritonitis ..	..	..	..	..	..	..	..	..	..	1	43	3	43	2		
126. Peritonitis (ot unknown cause) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
127. Other affections of the Digestive System ..	..	..	..	..	..	1	..	1	..	..	..	..	..	..		
VII.—DISEASES OF THE GENITO- URINARY SYSTEM (NON-VENEREAL).																
128. Acute Nephritis ..	..	1	..	1	..	2	1	2	1	4	59	16	63	2		
129. Chronic Nephritis ..	..	..	..	..	..	1	..	1	..	..	58	26	58	3		
Uraemia.. ..	..	..	..	..	..	..	..	..	..	..	1	1	1	..		
130. A.—Chyluria ..	..	..	..	..	..	..	..	..	..	8	210	3	218	11		
B.—Schistosomiasis	..	2	..	2	..	3	..	3	..	..	21	9	21	2		
Haematuria ..	2	8	..	10	..	5	..	5	..	2	5	1	7	..		
131. Other affections of the Kidneys—																
Pyelitis ..	..	1	..	1	..	8	1	8	1	..	1	..	1	..		
Uræmia ..	..	..	..	..	..	..	..	..	..	..	5	..	5	..		
Urinary Fistula ..	..	..	..	..	..	3	..	3	..	..	..	..	..	..		
Urinary Calculus.. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
132. Diseases of the Bladder—																
Cystitis ..	..	1	..	1	..	12	..	12	..	1	31	2	32	2		

### RETURN OF DISEASES—IN-PATIENTS—(Contd.).

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION (Non-Official)					NON-EUROPEAN OFFICIALS (including ASIATICS)				NATIVE GENERAL POPULATION (including ASIATICS)			
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Cases remaining in Hospital at end of year		
VII.—DISEASES OF THE GENITO- URINARY SYSTEM (NON-VENEREAL) —(Contd.).																	
134. Diseases of the Urethra—																	
(a) Stricture .. .. .	..	..	..	..	..	..	1	..	1	..	..	27	..	29	..	1	
(b) Other .. .. .	..	..	..	..	..	..	1	..	1	..	..	37	1	37	..	..	
135. Diseases of the Prostate—																	
Hypertrophy .. .. .	..	..	..	..	..	..	1	..	1	..	..	2	..	2	..	..	
Prostatitis .. .. .	..	..	..	..	..	..	7	1	7	1	..	2	1	2	..	..	
136. Diseases (Non-veneral) of the Genital Organs of Man ..	..	..	..	..	..	..	5	..	5	..	..	116	..	116	..	3	
Epididymitis .. .. .	..	..	..	..	..	..	..	..	..	..	..	22	..	23	..	1	
Orchitis .. .. .	..	..	..	..	..	..	1	..	1	..	..	63	..	66	..	1	
Hydrocele .. .. .	..	..	..	..	..	..	..	..	..	..	..	100	..	102	..	6	
Ulcer of Penis .. .. .	..	..	..	..	..	..	1	..	1	..	..	42	..	44	..	3	
Phymosis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
137. Cysts or other Non-malignant Tumours of the Ovaries ..	..	1	..	1	..	..	2	..	2	..	..	17	..	17	..	1	
Salpingitis—	..	..	..	..	..	..	6	..	6	..	..	33	..	33	..	1	
Abscess of the Pelvis .. ..	..	..	..	..	..	..	2	..	2	..	..	11	1	12	..	..	
139. Uterine Tumours (Non-malig- nant) .. .. .	..	1	..	1	..	..	4	..	4	..	..	25	2	26	..	1	
140. Uterine Haemorrhage (Non- puerperal) .. .. .	..	..	..	..	..	..	3	..	3	..	..	8	1	9	..	2	
141. A.—Metritis .. .. .	..	..	..	..	..	..	10	..	10	1	..	35	1	36	..	..	
B.—Other affections of the Fe- male Genital Organs ..	..	..	..	..	..	..	8	..	8	..	..	41	1	41	..	4	
Displacement of Uterus ..	..	..	..	..	..	..	4	..	4	..	..	33	2	39	..	3	
Amenorrhœa .. .. .	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..	..	
Leucorrhœa .. .. .	..	..	..	..	..	..	1	..	1	..	..	8	..	8	..	..	
Dysmenorrhœa .. .. .	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	
Dysmenorrhœa .. .. .	..	..	..	..	..	..	..	..	..	..	..	9	..	9	..	1	
142. Diseases of the Breast (Non- puerperal)—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Mastitis .. .. .	..	..	..	..	..	..	..	..	..	..	..	30	..	31	..	2	
Abscess of Breast .. ..	..	1	..	1	..	..	1	..	1	..	..	22	..	23	..	1	
Tumour .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION (NON-OFFICIAL)				NON-EUROPEAN OFFICIALS (including ASIATICS)				NATIVE GENERAL POPULATION (including ASIATICS)			
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	
VIII.—PUERPERAL STATE.																
143. A.—Normal Labour ..	..	..	..	..	..	8	..	..	..	..	8	366	3	374	10	..
B.—Accidents of Pregnancy—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(a) Abortion ..	..	..	..	..	..	1	3	..	..	..	2	92	1	94	2	..
(b) Ectopic Gestation ..	..	..	..	..	..	..	2	..	..	..	..	5	2	5	7	..
(c) Other accidents of Pregnancy	..	1	..	1	..	..	7	..	..	..	2	103	8	105	7	..
144. Puerperal Hæmorrhage ..	..	..	..	..	..	..	..	..	..	..	..	55	11	55	2	..
145. Other accidents of Parturition ..	..	..	..	..	..	2	2	1	..	..	1	27	10	28	..	..
146. Puerperal Septicæmia ..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
147. Phlegmasia Dolens ..	..	..	..	..	..	..	..	..	..	..	..	2	1	2	..	..
148. Puerperal Eclampsia ..	..	..	..	..	..	..	..	..	..	..	3	23	6	26	..	..
149. Sequelæ of Labour ..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..	..
150. Puerperal affections of the Breast	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	..
Caesarian Section ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.																
151. Gangrene ..	..	..	..	..	..	..	..	..	..	..	..	36	7	39	2	..
152. Boil ..	1	9	..	10	..	..	2	..	28	..	3	55	1	56	1	..
Carbuncle ..	..	2	..	2	..	..	4	..	..	..	1	9	..	10	..	..
153. Abscess ..	..	9	..	9	..	..	19	..	5	..	23	717	7	741	43	..
Whitlow ..	..	3	..	3	..	..	6	..	2	..	2	66	1	68	1	..
Cellulitis ..	..	3	..	3	..	1	13	..	3	..	12	310	5	322	12	..
154. A.—Tinea ..	..	1	..	1	..	..	..	..	1	..	..	9	..	9	..	..
B.—Scabies ..	..	..	..	..	..	..	..	..	1	..	9	267	1	276	5	..
Cancrum Oris ..	..	..	..	..	..	..	..	..	..	..	..	3	3	3	..	..
155. Other Diseases of the Skin—	..	7	..	7	..	..	..	..	2	..	13	102	8	115	13	..
Erythema ..	..	..	..	..	..	..	10	..	..	..	..	5	..	5	..	..
Urticaria ..	..	2	..	2	..	..	2	..	14	..	..	19	..	19	..	..
Eczema ..	..	..	..	..	..	..	1	..	13	..	6	92	..	98	3	..
Herpes ..	..	1	..	1	..	..	1	..	1	..	..	20	..	20	..	..
Dermatitis ..	..	..	..	..	..	..	..	..	2	..	2	70	1	72	2	..
Impetigo ..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..
Psoriasis ..	..	..	..	..	..	..	..	..	..	..	..	4	..	4	1	..
Elephantiasis ..	..	..	..	..	..	..	..	..	..	..	7	64	1	71	5	..
Myiasis ..	..	..	..	..	..	..	..	..	..	..	..	70	..	77	4	..
Chigoes ..	..	..	..	..	..	..	..	..	1	..	7	2	..	2	..	..
Cutaneous Leishmaniasis	..	..	..	..	..	..	..	..	..	..	379	3,731	23	4,110	297	..
Ulcers ..	..	5	..	5	..	..	..	..	4	..	..	..	..	..	..	..

RETURN OF DISEASES—IN-PATIENTS—(Contd.).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
X.—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS).																				
156. Diseases of Bones— Osteitis .. .. .	.. ..	.. 1	.. ..	.. 1	.. ..	.. ..	.. 4	.. 1	.. 4	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. 22	.. 106	.. 3	.. 128	.. 8
157. Diseases of Joints— Arthritis .. .. . Synovitis .. .. .	.. .. .. .. .. ..	.. .. .. 3	.. .. .. ..	.. .. .. 3	.. .. .. ..	.. .. .. ..	.. 4 .. 1	.. .. .. ..	.. 4 .. 1	.. .. .. ..	.. .. .. ..	.. 2 .. 5	.. .. .. ..	.. .. .. ..	.. 2 .. 5	.. 11 .. 12	.. 161 .. 140	.. 1 .. ..	.. 172 .. 152	.. 10 .. 6
158. Other Diseases of Bones or Organs of Locomotion .. .. Myalgia .. .. .	2 .. .. ..	10 .. .. ..	.. .. .. ..	12 .. .. ..	.. .. .. ..	.. .. .. ..	14 .. .. ..	.. .. .. ..	14 .. .. ..	1 .. .. ..	18 .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	24 .. .. ..	443 .. .. ..	1 .. .. ..	467 .. .. ..	50 .. .. ..
XI.—MALFORMATIONS.																				
159. Malformations .. .. Hydrocephalus .. .. Hypospadias .. .. Spina Bifida .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	5 .. 2 .. .. .. .. 2	.. .. .. .. .. .. .. ..	5 .. 2 .. .. .. .. 2	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..	.. .. .. .. .. .. .. ..
XII.—DISEASES OF INFANCY.																				
160. Congenital Debility .. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	23	13	23	..
161. Premature Birth .. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	18	11	20	..
162. Other affections of Infancy .. .. Inanition .. .. .	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	2 .. .. ..	101 .. .. ..	8 .. .. ..	103 .. .. ..	5 .. .. ..
163. Infant neglect (infants of three months or over) .. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	..	1	..
XIII.—AFFECTIONS OF OLD AGE.																				
164. Senility— Senile Dementia .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	5 .. .. ..	1 .. .. ..	5 .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	1 .. .. ..	18 .. 11 ..	17 .. 2 ..	19 .. 11 ..	.. .. .. 2

## RETURN OF DISEASES—IN-PATIENTS—(Contd.).

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION (NON-OFFICIAL)				NON-EUROPEAN OFFICIALS (including ASIATICS)				NATIVE GENERAL POPULATION (including ASIATICS)			
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.																
165. Suicide by Poisoning .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
166. Corrosive Poisoning (intentional) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
167. Suicide by Gas Poisoning ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
168. Suicide by Hanging or Stran- gulation .. ..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	..
169. Suicide by Drowning .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
170. Suicide by Firearms .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
171. Suicide by Cutting or Stabbing Instruments .. ..	..	..	..	..	..	..	..	..	..	..	..	2	1	2	..	..
172. Suicide by jumping from a height .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
173. Suicide by Crushing .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
174. Other Suicides .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
175. Food Poisoning— Botulism.. ..	..	1	..	1	..	..	3	..	3	..	..	1	..	27	27	..
176. Attacks of Poisonous Animals..	..	1	..	1	..	..	..	..	..	..	..	..	..	64	67	4
Snake Bite .. ..	..	..	..	..	..	..	2	..	2	..	..	3	..	19	19	..
Insect Bite .. ..	..	..	..	..	..	..	1	..	1	..	..	..	..	13	14	..
177. Other Accidental Poisonings ..	..	..	..	..	..	..	2	..	2	..	..	360	50	394	32	..
178. Burns (by Fire) .. ..	..	2	..	2	..	..	1	..	1	..	..	96	15	100	6	..
179. Burns (other than by Fire) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
180. Suffocation (Accidental) ..	..	..	..	..	..	..	..	..	..	..	..	7	..	7	..	..
181. Poisoning by Gas (Accidental) ..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..
182. Drowning (Accidental) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
183. Wounds (by Firearms, War ex- cepted) .. ..	..	..	..	..	..	..	4	..	4	..	..	37	4	42	1	..
184. Wounds (by Cutting or Stabbing Instruments) .. ..	..	4	..	4	..	..	2	..	2	..	..	554	21	576	31	..
185. Wounds (by Fall) .. ..	..	1	1	1	..	..	1	..	1	..	..	156	2	160	8	..
186. Wounds (in Mines or Quarries) ..	..	..	..	..	..	..	..	..	..	..	..	7	..	7	2	..

RETURN OF DISEASES—IN-PATIENTS—(Contd.).

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION (NON-OFFICIAL)				NON-EUROPEAN OFFICIALS (including ASIATICS)				NATIVE GENERAL POPULATION (including ASIATICS)			
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES—(Contd.).																
187. Wounds (by Machinery)...	..	..	..	..	..	..	..	..	2	..	..	73	4	77	4	
188. Wounds (Crushing, e.g., Rail- way Accidents, etc.) ..	..	1	..	1	..	..	..	..	..	..	..	60	1	60	2	
189. Injuries inflicted by Animals, Bites, Kicks, etc. ..	..	3	..	3	..	2	..	..	..	..	7	133	9	140	5	
190. Wounds inflicted on Active Ser- vice ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
191. Executions of Civilians by Bel- ligerents ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
192. A.—Over Fatigue ..	..	..	..	..	..	..	..	..	..	..	..	4	..	4	..	
B.—Hunger or Thirst ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
193. Exposure to Cold, Frostbite, etc.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
194. Exposure to Heat ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Heatstroke ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Sunstroke ..	..	..	..	..	..	..	..	..	..	..	..	7	1	7	..	
195. Lightning Stroke...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
196. Electric Shock ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
197. Murder by Firearms ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
198. Murder by Cutting or Stabbing Instruments ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
199. Murder by other means ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
200. Infanticide (Murder of an Infant under one year ..	..	2	..	2	1	..	4	..	..	..	2	41	..	43	1	
201. A.—Dislocation ..	..	11	..	11	..	..	2	..	8	..	..	97	..	97	..	
B.—Sprain ..	..	4	1	4	..	22	22	2	1	..	1	477	18	516	45	
C.—Fracture ..	..	41	..	48	1	43	43	1	126	..	..	1,996	20	2 085	102	
202. Other External Injuries ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
203. Deaths by Violence of unknown cause ..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	

RETURN OF DISEASES—IN-PATIENTS—(Contd.).

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION (NON-OFFICIAL)					NON-EUROPEAN OFFICIALS (including ASIATICS)					NATIVE GENERAL POPULATION (including ASIATICS)				
	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year	Cases remaining in Hospital from previous year	Total Admis- sion	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year
XV.—ILL-DEFINED DISEASES.																				
204. Sudden Death (cause unknown)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
205. A.—Diseases not already specified or ill-defined ..	..	1	..	1	..	..	5	..	5	..	..	..	..	..	..	..	5	..	5	..
Ascites ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	47	11	52	2
Oedema ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23	1	24	2
Asthenia ..	..	10	..	10	..	..	13	..	13	..	..	4	..	4	..	..	78	11	85	2
Shock ..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	6	1	6	..
Hyperpyrexia ..	1	5	..	6	..	..	31	..	31	..	..	..	..	..	..	..	10	2	10	..
P.U.O. ....	1	6	..	7	..	..	12	..	12	..	..	43	..	43	..	..	88	4	92	3
Vertigo (.) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Debility ..	..	2	..	2	..	..	1	..	1	..	..	..	..	..	..	..	24	6	26	2
N.Y.D. ....	..	..	..	..	..	..	6	..	6	..	..	6	..	6	..	..	15	2	15	2
Madura Foot ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Marasmus ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	24	14	26	..
Sterility ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
B.—Malingering ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	..	10	..
XVI.—DISEASES, THE TOTAL OF WHICH HAVE NOT CAUSED 10 DEATHS.																				
GRAND TOTAL ..	13	958	4	971	9	20	1,280	44	1,300	18	25	2,089	3	2,114	12	1,902	38,922	2,020	40,824	1,831
SURGICAL OPERATIONS—																				
Under General Anæsthesia ..	..	41	..	..	..	..	317	..	..	..	..	20	..	..	..	..	4,597	..	..	..
Others ..	..	17	..	..	..	..	38	..	..	..	..	7	..	..	..	..	553	..	..	..

TABLE VI.  
COLONY AND PROTECTORATE OF KENYA.  
RETURN OF DISEASES (Out-Patients).  
NUMBERS TREATED DURING THE YEAR 1934.

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES.												
1. Enteric Group—												
(a) Typhoid Fever ..	..	..	..	..	..	..	..	..	..	3	2	5
(b) Paratyphoid A. ..	..	..	..	..	..	..	..	..	..	..	..	..
(c) Paratyphoid B. ..	..	..	..	..	..	..	..	..	..	..	..	..
(d) Type not defined ..	..	..	..	..	..	..	..	..	..	..	..	..
T.A.B. Reaction ..	..	..	..	..	..	..	..	..	..	..	..	..
2. Typhus ..	..	..	..	..	..	..	..	..	..	..	..	..
3. Relapsing Fever ..	..	..	..	..	..	..	..	..	..	34	15	49
4. Undulant Fever ..	..	..	..	..	..	..	..	..	..	..	..	..
5. Malaria —												
Clinical ..	22	2	24	23	8	31	251	35	286	15,071	3,560	18,631
(a) Tertian ..	..	..	..	..	..	..	3	..	3	210	64	274
(b) Quartan ..	..	..	..	..	..	..	8	..	8	385	152	537
(c) Aestivo-autumnal ..	13	4	17	23	18	41	47	8	55	4,796	1,392	6,188
Cerebral ..	..	..	..	..	..	..	2	..	2	..	..	..
(d) Undifferentiated ..	1	..	1	..	..	..	3	..	3	931	278	1,209
(e) Cachexia ..	2	..	2	5	..	5	1	..	1	144	35	179
(f) Blackwater ..	..	..	..	..	1	1	..	..	..	2	..	2
Vaccinia ..	..	..	..	..	1	1	3	..	3	789	315	1,104
6. Smallpox ..	..	..	..	..	..	..	..	..	..	323	1	324
Alastrim ..	..	..	..	..	..	..	..	..	..	..	..	..
7. Measles ..	..	..	..	..	..	..	8	..	8	227	115	342
8. Scarlet Fever ..	..	..	..	..	..	..	..	..	..	..	..	..
9. Whooping Cough ..	..	..	..	..	..	..	..	..	..	153	230	383
10. Diphtheria ..	..	..	..	..	..	..	..	..	..	1	..	1
11. Influenza ..	13	1	14	13	8	21	986	145	1,131	10,047	1,811	11,858
12. Miliary Fever ..	..	..	..	..	4	4	..	1	..	..	..	..
13. Mumps ..	..	..	..	..	1	1	13	..	14	260	66	326
14. Cholera ..	..	..	..	..	..	..	..	..	..	..	..	..
15. Epidemic Diarrhoea ..	..	..	..	..	..	..	..	..	..	24	9	33
16. Dysentery ..	..	..	..	1	..	1	..	..	..	1	..	1
(a) Amoebic ..	19	2	21	3	6	9	11	1	12	184	137	321
(b) Bacillary ..	..	1	1	2	6	8	..	..	..	48	9	57
(c) Undefined or due to other causes ..	1	..	1	1	3	4	1	..	1	239	95	334

## RETURN OF DISEASES—OUT-PATIENTS—(Contd.).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—(Contd.).												
(17. Plague—												
(a) Bubonic .. .. .	..	..	..	..	..	..	..	..	..	2	..	2
(b) Pneumonic .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(c) Septicæmic .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(d) Undefined .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
18. Yellow Fever .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
19. Spirochaetosis ictero-hæmorrhagica .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
20. Leprosy .. .. .	..	..	..	..	..	..	..	..	..	105	27	132
21. Erysipelas .. .. .	..	..	..	..	..	..	..	..	..	..	1	1
22. Acute Poliomyelitis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
23. Encephalitis Lethargica .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
24. Epidemic Cerebro-spinal Fever..	..	..	..	..	..	..	..	..	..	2	..	2
25. Other Epidemic Diseases—										..	..	..
(a) Rubella (German Measles)	..	..	..	..	..	..	..	..	..	..	..	..
(b) Varicella (Chicken-pox) ..	..	..	..	..	..	..	1	..	1	349	33	382
(c) Kala-azar .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(d) Phlebotomus Fever .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(e) Dengue .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(f) Epidemic Dropsy .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(g) Yaws .. .. .	..	..	..	..	..	..	2	..	2	7,400	4,914	12,314
(h) Trypanosomiasis .. .. .	..	..	..	..	..	..	..	..	..	3	1	4
26. Glanders .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
27. Anthrax .. .. .	..	..	..	..	..	..	..	..	..	14	5	19
28. Rabies .. .. .	..	..	..	..	..	..	..	..	..	10	..	10
29. Tetanus .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
30. Mycosis .. .. .	..	..	..	..	..	..	..	..	..	2	1	3
31. Tuberculosis, Pulmonary and Laryngeal .. .. .	..	..	..	1	..	1	..	..	..	161	58	219
32. Tuberculosis of the Meninges or Central Nervous System ..	..	..	..	..	..	..	..	..	..	..	..	..
33. Tuberculosis of the Intestines or Peritoneum .. .. .	..	..	..	..	..	..	..	..	..	..	1	1
34. Tuberculosis of the Vertebral Column .. .. .	..	..	..	..	..	..	..	..	..	8	6	14
35. Tuberculosis of Bones and Joints	..	..	..	..	..	..	..	..	..	20	11	31

## DISEASES

## I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—(Contd.).

36.	Tuberculosis of other Organs—	..	..	..
	(a) Skin or Subcutaneous Tissue	..	..	..
	(Lupus)	..	..	..
	(b) Bones	..	..	..
	(c) Lymphatic System	..	..	..
	(d) Genito-urinary	..	..	..
	(e) Other Organs	..	..	..
37.	Tuberculosis disseminated—	..	..	..
	(a) Acute	..	..	..
	(b) Chronic	..	..	..
38.	Syphilis ..	..	..	..
	(a) Primary	..	..	..
	(b) Secondary	..	..	..
	(c) Tertiary	..	..	..
	(d) Hereditary	..	..	..
	(e) Period not indicated	..	..	..
	Condyloma	..	..	..
39.	Soft Chancre	..	..	..
40.	A.—Gonorrhœa and its complications	..	..	..
	B.—Gonorrhœal Ophthalmia	..	..	..
	C.—Gonorrhœal Arthritis	..	..	..
	D.—Granuloma Venereum	..	..	..
41.	Septicæmia	..	..	..
42.	Other Infectious Diseases	..	..	..
	Trypanosomiasis	..	..	..

## II.—GENERAL DISEASES NOT MENTIONED ABOVE.

43. Cancer or other Malignant Tumours of the Buccal Cavity ..
44. Cancer or other Malignant Tumours of the Stomach or Liver ..
45. Cancer or other Malignant Tumours of the Peritoneum Intestines, Rectum ..

### RETURN OF DISEASES—OUT-PATIENTS—(Contd.).

[illegible]

## RETURN OF DISEASES—OUT-PATIENTS—(Contd.).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
II.—GENERAL DISEASES NOT MENTIONED ABOVE—(Contd.).												
66. Alcoholism .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
67. Chronic poisoning by mineral substances (Lead, Mercury, etc.) ..	..	..	..	..	..	..	..	..	..	..	..	..
68. Chronic poisoning by organic substances (Morphia, Cocaine, etc.) .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
69. Other General Diseases—												
Auto-intoxication.. .. .	..	..	..	..	..	..	1	..	1	..	..	..
Purpura Hæmorrhagica.. .. .	..	..	..	..	..	..	..	..	..	..	..	..
Hæmophilia .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
Diabetes Insipidus .. .. .	..	..	..	..	..	..	..	..	..	4	1	5
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.												
70. Encephalitis (not including Encephalitis Lethargica) .. .. .	..	..	..	..	..	..	..	..	..	24	39	63
71. Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Meningitis) .. .. .	..	..	..	1	..	1	1	..	1	..	..	..
72. Locomotor Ataxia .. .. .	1	..	1	..	..	..	..	..	..	..	..	..
73. Other affections of the Spinal Cord												
74. Apoplexy—												
(a) Hæmorrhage .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(b) Embolism .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(c) Thrombosis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
75. Paralysis—												
(a) Hemiplegia .. .. .	..	..	..	..	..	..	..	..	..	5	..	5
(b) Other Paralysis .. .. .	..	..	..	..	..	..	..	..	..	19	2	21
76. General Paralysis of the Insane..	..	..	..	..	..	..	..	..	..	1	..	1
77. Other forms of Mental Alienation										13	6	19
78. Epilepsy .. .. .	..	..	..	..	..	..	..	..	..	41	11	52
79. Eclampsia Convulsions (non-puerperal) 5 years or over ..	..	..	..	..	..	..	..	..	..	..	..	..
Concussion of the Brain												
Sciatica .. .. .	..	..	..	..	..	..	..	..	..	9	..	9
80. Infantile Convulsions .. .. .	..	..	..	..	..	..	..	..	..	4	6	10
81. Chorea .. .. .	..	..	..	..	..	..	..	..	..	21	4	25

## RETURN OF DISEASES—OUT-PATIENTS—(Contd.).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.—(Contd.)												
82. A.—Hysteria .. .. .	..	..	..	..	1	1	..	..	..	36	21	57
Neuralgia .. .. .	1	..	1	..	1	1	23	..	23	1,288	254	1,542
B.—Neuritis .. .. .	2	..	2	..	2	2	9	2	11	179	42	221
C.—Neurasthenia .. .. .	2	..	2	..	2	4	9	2	11	20	4	24
Insomnia .. .. .	1	..	1	..	2	2	2	..	2	..	..	..
Headache .. .. .	..	..	..	..	..	..	2	..	2	456	31	487
83. Cerebral Softening .. .. .	..	..	..	..	..	..	..	..	..	..	1	1
Coussusion .. .. .	..	..	..	..	..	..	..	..	..	1	..	1
84. Other affections of the Nervous System, such as Paralysis Agitans .. .. .	2	1	3	1	1	2	..	..	..	86	5	31
85. Affections of the Organs of Vision .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(a) Conjunctivitis .. .. .	14	..	14	3	3	6	97	16	113	79,62	4,823	12,785
(b) Trachoma .. .. .	..	..	..	..	..	..	14	2	16	130	48	178
(c) Tumours of the Eye .. .. .	..	..	..	..	..	..	..	..	..	13	2	15
(d) Other affections of the Eye .. .. .	6	..	6	7	4	11	51	2	53	850	292	1,142
Xerophthalmia .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
86. Affections of the Ear or Mastoid Sinus .. .. .	18	..	18	15	16	31	56	5	61	3,909	1,910	5,819
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM.												
87. Pericarditis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
88. Acute Endocarditis or Myocarditis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
89. Angina Pectoris .. .. .	..	..	..	..	..	..	..	..	..	..	3	3
90. Other Diseases of the Heart—	..	..	..	..	..	..	..	..	..	..	6	29
(a) Valvular—	1	..	1	1	..	1	4	7	11	23	13	43
Mitral .. .. .	..	..	..	..	..	..	4	..	4	30	1	3
Aortic .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
Tricuspid .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
Pulmonary .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(b) Myocarditis .. .. .	..	..	..	..	..	..	..	..	..	..	1	7
91. Diseases of the Arteries—	..	..	..	..	..	..	..	..	..	..	..	..
(a) Aneurism .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(b) Arterio-sclerosis .. .. .	..	..	..	..	..	..	..	..	..	1	..	1
(c) Other Diseases .. .. .	..	..	..	..	..	..	..	..	..	1	..	..
92. Embolism or Thrombosis (non-cerebral) .. .. .	..	..	..	..	..	..	2	3	5	..	..	..

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM—(Contd.).												
93. Diseases of the Veins—												
Hæmorrhoids ..	2	..	2	1	4	5	22	..	22	45	16	61
Varicose Veins ..	..	..	..	2	1	3	..	..	..	11	..	11
Phlebitis ..	..	..	..	..	..	..	..	..	..	..	..	..
94. Diseases of the Lymphatic System—												
Adenitis ..	..	..	..	1	..	1	..	..	..	4	5	9
Lymphangitis ..	..	..	..	..	..	..	..	..	..	90	..	90
Lymphadenitis, Bubo (non-specific) ..	..	..	..	..	..	..	..	..	..	14	4	18
95. Hæmorrhage of undetermined cause ..	..	..	..	3	..	3	2	..	2	360	88	448
96. Other affections of the Circulatory System ..	..	..	..	1	1	2	..	..	..	2	..	2
	..	..	..	1	..	1	1	..	1	6	1	7
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM.												
97. Diseases of the Nasal Passages—												
Adenoids ..	1	..	1	1	1	2	..	..	..	11	4	15
Polypus ..	..	..	..	..	..	..	..	..	..	5	..	5
Dysphagia ..	..	..	..	..	..	..	..	..	..	..	..	..
Rhinitis ..	1	..	1	..	..	..	13	..	13	99	2	101
Coryza ..	17	..	17	13	14	27	145	11	156	5,812	1,260	7,072
98. Affections of the Larynx—												
Laryngitis ..	1	..	1	..	1	1	..	..	..	4	..	4
99. Bronchitis—												
(a) Acute ..	11	..	11	6	3	9	500	85	585	19,794	6,238	26,032
(b) Chronic ..	..	..	..	1	..	1	11	..	11	2,178	670	2,848
100. Broncho-pneumonia ..	..	..	..	1	..	1	1	3	4	108	92	200
101. Pneumonia—												
(a) Lobar ..	..	..	..	..	1	1	..	..	..	..	..	..
(b) Unclassified ..	..	..	..	..	..	..	2	2	2	111	26	137
102. Pleurisy, Empyema ..	..	..	..	..	..	2	2	..	4	180	57	237
103. Congestion of the Lungs ..	..	..	..	2	..	2	..	1	1	49	13	62
104. Gangrene of the Lungs ..	..	..	..	..	..	..	..	..	..	96	25	121
105. Asthma ..	1	..	1	1	2	3	37	8	45	300	106	406
106. Pulmonary Emphysema ..	..	..	..	4	..	4	..	..	..	..	..	..
107. Other affections of the Lungs ..	5	..	5	..	1	1	..	..	..	867	377	1,244
Pulmonary Spirochætosus ..	..	..	..	..	..	..	..	..	..	..	..	..
Pleurodynia ..	..	..	..	..	..	..	..	..	..	222	79	301

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
VI.—DISEASES OF THE DIGESTIVE SYSTEM. . .	..	..	..	5	1	6	..	..	..	..	..	..
108. A.—Diseases of Teeth or Gums—	..	..	..	17	4	21	..	..	8	231	68	299
Caries .. .. .	5	..	5	6	11	17	8	..	52	6,520	2,198	8,718
Pyorrhoea, etc. .. .	2	..	2	3	2	5	24	1	25	436	59	495
B.—Other affections of the Mouth	3	..	3	..	1	1	45	7	52	30	12	42
Stomatitis .. .. .	..	..	..	..	..	..	6	1	7	394	184	578
Glossitis, etc. .. .	..	..	..	..	..	..	..	..	..	26	9	35
109. Affections of the Pharynx or	..	..	..	..	..	..	..	..	..	..	..	..
Tonsils .. .. .	1	..	1	..	..	..	1	..	1	91	..	91
Quinsy .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
Tonsillitis .. .. .	5	2	7	7	19	26	69	4	73	1,502	443	1,945
Pharyngitis .. .. .	13	2	15	9	9	18	38	..	38	1,734	243	1,997
110. Affections of the Oesophagus	..	..	..	4	..	4	..	..	..	11	11	22
111. A.—Ulcer of the Stomach	..	..	..	..	1	1	..	..	..	..	1	1
B.—Ulcer of the Duodenum ..	..	..	..	..	..	..	..	..	..	2	1	3
112. Other affections of the Stomach..	..	..	..	..	..	..	3	..	3	158	156	314
Gastritis .. .. .	1	..	1	2	4	6	28	6	34	211	82	293
Dyspepsia .. .. .	15	..	15	6	16	22	72	10	82	2,500	1,041	3,541
113. Diarrhoea and Enteritis—	3	1	4	..	..	..	..	..	..	..	..	..
Under two years .. .. .	2	..	2	1	5	6	..	..	..	542	597	1,139
114. Diarrhoea and Enteritis—	..	..	..	..	..	..	..	..	..	..	..	..
Two years and over .. .. .	9	..	9	9	3	12	75	15	90	2,513	974	3,487
Colitis .. .. .	1	..	1	1	1	2	30	10	40	351	116	467
Ulceration .. .. .	..	..	..	..	..	..	..	..	..	..	14	14
Colic .. .. .	..	..	..	1	4	5	26	8	34	344	199	543
114A. Sprue .. .. .	..	..	..	..	..	..	..	..	..	28	2	30
115. Ankylostomiasis .. .. .	1	..	1	..	..	..	6	1	7	678	373	1,051
116. Diseases due to Intestinal Para-	..	..	..	..	..	..	..	..	..	..	..	..
sites—	..	..	..	..	..	..	..	..	..	..	..	..
(a) Cestoda (Tænia) .. .. .	..	..	..	2	1	1	12	..	12	19,525	3,224	22,749
(b) Trematoda (Flukes) .. .. .	..	..	..	..	..	2	..	..	..	14	3	17
(c) Nematoda (other than —	..	..	..	..	..	..	..	..	..	..	..	..
Ankylostoma) .. .. .	..	..	..	3	..	3	..	..	..	5	1	6
Ascaris .. .. .	..	..	..	..	..	3	..	..	..	3,722	3,417	7,139
Trichocephalus dispar.	..	..	..	..	..	..	..	..	..	42	12	54
Trichina .. .. .	..	..	..	..	..	..	..	..	..	27	6	33
Dracunculus.. .. .	..	..	..	..	..	..	..	..	..	4	..	4
Strongylus .. .. .	..	..	..	..	..	..	..	..	..	22	..	22
Oxyuris .. .. .	..	..	..	1	..	1	..	..	..	17	10	27
(d) Coccidia .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(e) Other Parasites .. .. .	2	..	2	..	..	..	..	..	..	492	128	620
(f) Unclassified .. .. .	..	..	..	..	..	..	..	..	..	2,033	741	2,774

RETURN OF DISEASES—OUT-PATIENTS—(Contd.).

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62

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
VI.—DISEASES OF THE DIGESTIVE SYSTEM—(Contd.).												
117. Appendicitis .. ..	..	..	..	1	7	8	1	..	1	127	..	127
118. Hernia .. ..	1	..	1	2	..	2	..	..	..	4	5	9
119. A.—Affections of the Anus .. ..	..	..	..	..	..	..	1	..	1	7	4	11
Fistula, etc. .. ..	..	..	..	..	..	..	2	..	2	3	3	6
B.—Other affections of the In- testines—	..	..	..	2	1	3	..	..	..	20	..	20
Enteroptosis .. ..	..	..	..	..	..	..	..	..	..	..	..	..
Constipation... ..	6	..	6	3	3	6	149	7	156	12,885	5,322	18,207
120. Acute Yellow Atrophy of the Liver .. ..	..	..	..	..	2	2	..	..	..	..	..	..
121. Hydatid of the Liver .. ..	..	..	..	..	..	..	..	..	..	..	..	..
122. Cirrhosis of the Liver— (a) Alcoholic .. ..	..	..	..	..	..	..	..	..	..	..	..	..
(b) Other forms .. ..	..	..	..	..	..	..	..	..	..	1	..	1
123. Biliary Calculus .. ..	..	..	..	..	..	..	..	..	..	2	..	2
124. Other affections of the Liver— Abscess .. ..	2	..	2	..	..	..	..	..	..	..	..	..
Hepatitis .. ..	1	..	1	1	..	1	..	..	..	..	1	1
Cholecystitis .. ..	2	..	2	3	..	3	14	2	16	84	19	103
Jaundice .. ..	..	..	..	..	..	..	..	..	..	4	1	5
125. Diseases of the Pancreas .. ..	..	..	..	..	..	..	2	..	2	18	2	20
126. Peritonitis (of unknown cause)..	..	..	..	..	..	..	..	..	..	..	..	..
127. Other affections of the Digestive System .. ..	4	..	4	1	3	4	1	..	1	441	5	446
VII.—DISEASES OF THE GENITO- URINARY SYSTEM (NON-VENEREAL).												
128. Acute Nephritis .. ..	..	..	..	..	1	1	..	..	..	16	13	29
129. Chronic Nephritis .. ..	..	..	..	1	..	1	..	..	..	13	5	18
130. A.—Chyluria .. ..	..	..	..	..	..	..	..	..	..	4	..	4
B.—Schistosomiasis .. ..	1	..	1	..	..	..	1	..	1	210	21	231
131. Other affections of the Kidneys— Pyelitis .. ..	..	..	..	1	2	3	..	..	..	3	..	3
132. Urinary Calculus... ..	..	..	..	1	5	6	1	..	1	1	1	2
133. Diseases of the Bladder— Cystitis .. ..	6	..	6	19	6	25	26	4	30	66	28	94

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
VII.—DISEASES OF THE GENITO- URINARY SYSTEM (NON-VENEREAL) —(Contd.).												
134. Diseases of the Urethra— (a) Stricture .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
(b) Other .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
135. Diseases of the Prostate— Hypertrophy .. .. .	3	..	3	1	1	2	3	..	3	132	4	136
Prostatitis .. .. .	..	..	..	..	..	..	..	..	..	1	1	2
136. Diseases (Non-venereal) of the Genital Organs of Man— Phimosis .. .. .	..	..	..	6	..	6	..	..	..	4	..	4
Epididymitis .. .. .	..	..	..	2	..	2	..	..	..	41	..	41
Orchitis .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
Hydrocele .. .. .	..	..	..	1	..	1	..	..	..	14	1	15
Ulcer of Penis .. .. .	..	..	1	2	..	2	2	1	3	163	1	164
137. Cysts or other Non-malignant Tumours of the Ovaries ..	1	..	1	..	..	..	1	..	1	194	..	194
138. Salpingitis— Abscess of the Pelvis ..	..	..	..	..	..	..	..	..	..	26	..	26
139. Uterine Tumours (Non malig- nant) .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
140. Uterine Hæmorrhage (Non- puerperal) .. .. .	..	..	..	..	4	4	..	1	1	..	1	1
141. A.—Metritis .. .. .	..	..	..	..	1	1	..	..	..	..	13	13
B.—Other affections of the Fe- male Genital Organs— Displacement of Uterus ..	..	..	..	..	..	..	..	..	..	..	2	2
Amenorrhœa .. .. .	..	..	..	..	..	..	..	..	..	..	6	6
Dysmennorrhœa .. .. .	..	..	..	..	..	..	..	..	..	..	..	..
Leucorrhœa.. .. .	..	..	..	..	12	12	..	..	..	..	22	22
142. Diseases of the Breast (Non- puerperal)— Mastitis .. .. .	..	..	..	..	2	2	..	9	..	..	21	21
Abscess of Breast .. ..	..	..	..	..	3	3	..	2	2	..	112	112
	..	..	..	..	..	..	..	2	2	..	10	10
	..	..	..	..	..	..	..	..	..	..	2	2
	..	..	..	..	..	..	..	..	..	1	84	35
	..	..	..	..	..	..	..	..	..	..	14	14
VIII.—PUERPERAL STATE.												
143. A.—Normal Labour .. ..	..	..	..	..	5	5	..	..	..	..	103	103
B.—Accidents of Pregnancy— (a) Abortion .. .. .	..	..	..	..	4	4	..	..	..	..	67	67
(b) Ectopic Gestation .. ..	..	..	..	..	..	..	..	16	16	..	1	1
(c) Other accidents of Pregnancy	..	..	..	..	7	7	..	11	11	..	159	159

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
VIII.—PUERPERAL STATE—(Contd.).												
144. Puerperal Hæmorrhage ..	..	..	..	..	1	1	..	16	16	..	1	1
145. Other accidents of Parturition ..	..	..	..	..	..	..	..	..	..	..	4	4
146. Puerperal Septicæmia ..	..	..	..	..	..	..	..	..	..	..	..	..
147. Phlegmasia Dolens ..	..	..	..	..	..	..	..	..	..	..	..	..
148. Puerperal Eclampsia ..	..	..	..	..	..	..	..	..	..	..	..	..
149. Sequelæ of Labour ..	..	..	..	..	..	..	..	..	..	..	16	16
150. Puerperal affections of the Breast	..	..	..	..	..	..	..	3	3	..	8	8
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.												
151. Gangrene ..	..	..	..	..	..	..	..	..	..	4	..	4
152. Boil ..	19	..	19	7	18	25	64	5	69	8	1	9
Carbuncle ..	2	..	2	..	..	..	1	..	1	1,654	286	1,940
153. Abscess ..	2	..	2	1	2	3	19	1	20	7	6	13
Whitlow ..	1	..	1	1	2	3	3	1	4	1,231	285	1,516
Cellulitis ..	4	..	4	4	3	7	4	..	4	252	27	279
154. A.—Tinea ..	5	..	5	..	2	2	6	..	6	2,425	324	2,749
B.—Scabies ..	..	..	..	1	..	1	7	..	7	438	151	589
155. Other Diseases of the Skin—	8	..	8	15	10	25	9	4	13	12,020	4,367	16,387
Erythema ..	1	..	1	..	..	..	..	..	..	916	326	1,242
Urticaria..	1	..	1	3	4	7	36	7	43	34	5	39
Eczema ..	8	..	8	3	5	8	73	17	90	321	60	381
Herpes ..	..	..	..	1	1	2	3	..	3	923	344	1,267
Psoriasis ..	..	..	..	1	1	2	1	..	1	113	11	124
Elephantiasis ..	..	..	..	..	..	..	1	..	1	19	4	23
Myiasis ..	..	..	..	..	..	..	1	..	1	104	65	169
Chigoes ..	3	..	3	3	2	5	5	..	5	2	..	2
Cutaneous Leishmaniasis	..	..	..	3	..	3	..	..	..	2,842	1,288	4,130
Dermatitis ..	18	..	18	4	5	9	1	..	1	23	22	45
Ulcers ..	11	..	11	3	3	6	52	8	60	285	85	370
Impetigo..	..	..	..	..	..	..	..	..	..	20,277	6,398	26,675

## RETURN OF DISEASES—OUT-PATIENTS—(Contd.).

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RETURN OF DISEASES—OUT-PATIENTS—(Contd.).

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DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.												
165. Suicide by Poisoning .. ..	..	..	..	..	..	..	..	..	..	..	..	..
166. Corrosive Poisoning (intentional)	..	..	..	..	..	..	..	..	..	..	..	..
167. Suicide by Gas Poisoning ..	..	..	..	..	..	..	..	..	..	..	..	..
168. Suicide by Hanging or Strangulation .. ..	..	..	..	..	..	..	..	..	..	..	..	..
159. Suicide by Drowning .. ..	..	..	..	..	..	..	..	..	..	..	..	..
170. Suicide by Firearms .. ..	..	..	..	..	..	..	..	..	..	..	..	..
171. Suicide by Cutting or Stabbing Instruments .. ..	..	..	..	..	..	..	..	..	..	..	..	..
172. Suicide by jumping from a height .. ..	..	..	..	..	..	..	..	..	..	..	..	..
173. Suicide by Crushing .. ..	..	..	..	..	..	..	..	..	..	..	..	..
174. Other Suicides .. ..	..	..	..	..	..	..	..	..	..	..	..	..
175. Food Poisoning— Botulism .. ..	1	..	1	1	..	1	..	..	..	22	10	32
176. Attacks of Poisonous Animals— Snake Bite .. ..	..	..	..	..	..	..	2	..	2	44	..	44
Insect Bite .. ..	2	..	2	2	1	3	14	1	15	25	9	34
177. Other Accidental Poisonings ..	..	..	..	..	..	..	..	..	..	128	28	156
178. Burns (by Fire) .. ..	1	..	1	1	..	1	..	..	3	1,113	513	1,626
179. Burns (other than by Fire) ..	..	..	..	2	2	4	18	2	20	250	643	893
180. Suffocation (Accidental) ..	..	..	..	..	..	..	..	..	..	115	41	156
181. Poisoning by Gas (Accidental) ..	..	..	..	..	..	..	..	..	..	..	..	..
182. Drowning (Accidental) .. ..	..	..	..	..	..	..	..	..	..	..	..	..
183. Wounds (by Firearms, War accepted) .. ..	1	..	1	..	..	..	..	..	..	111	9	120
184. Wounds (by Cutting or Stabbing Instruments) .. ..	1	..	1	1	1	2	8	..	8	3,396	817	4,213
185. Wounds (by Fall) .. ..	1	..	1	1	..	1	12	..	12	2,141	389	2,530
186. Wounds (in Mines or Quarries) ..	..	..	..	..	..	..	..	..	..	..	..	..
187. Wounds (by Machinery) .. ..	..	..	..	..	..	..	..	..	..	35	1	36
188. Wounds (Crushing, <i>e.g.</i> , Railway Accidents, etc.) .. ..	..	..	..	..	..	..	1	..	1	47	..	47
189. Injuries inflicted by Animals, Bites, Kicks, etc. .. ..	3	..	3	..	1	1	1	..	1	144	46	190

## RETURN OF DISEASES—OUT-PATIENTS—(Contd.).

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RETURN OF DISEASES—OUT-PATIENTS—(Contd.).

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION (NON-OFFICIAL)			NON-EUROPEAN OFFICIALS (including ASIATICS)			NATIVE GENERAL POPULATION (including ASIATICS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
XVI.—DISEASES, THE TOTAL OF WHICH HAVE NOT CAUSED 10 DEATHS.	..	..	..	..	..	..	..	..	..	..	..	..
	456	19	475	384	405	789	3,891	628	4,519	248,046	79,414	327,460
GRAND TOTAL	..											
SURGICAL OPERATIONS—												
Under General Anæsthesia	..	..	..	..	..	..	..	..	..	..	..	..
Others	..	..	..	..	..	..	..	..	..	..	..	..

# MEDICAL RESEARCH LABORATORY ANNUAL REPORT, 1934

By

R. P. CORMACK, M.B., CH.B., D.P.H., D.T.M. & H.  
*Senior Bacteriologist*



CONTENTS

	PAGE
A.—ADMINISTRATION.. .. .	1
B.—SECTION OF MEDICAL BIOLOGY .. .. .	5
C.—SECTION OF SEROLOGY .. .. .	6
D.—CALF LYMPH SECTION.. .. .	6
E.—SECTION OF PATHOLOGY .. .. .	13
F.—BACTERIOLOGICAL DIVISION .. .. .	14
G.—SECTION OF ENTOMOLOGY .. .. .	20
H.—SECTION OF BIOCHEMISTRY .. .. .	25
APPENDIX.—Résumé of Work Carried out at the Clinical Laboratory attached to the Native Civil Hospital, Mombasa .. .. .	27



# ANNUAL REPORT OF THE MEDICAL RESEARCH LABORATORY KENYA COLONY AND PROTECTORATE, FOR 1934

STAFF, 1934.

*Senior Bacteriologist*—R. P. Cormack.

*Assistant Bacteriologists*—F. P. G. de Smidt, H. D. Tonking, F. W. Vint.

*Government Analyst*—M. H. Fox.

*Biochemist*—D. Harvey.

*Medical Entomologists*—C. B. Symes, J. I. Roberts.

*Laboratory Superintendent*—F. A. Bailey.

*Laboratory Assistants, Senior Grade*—H. M. Nefdt, W. L. Titman, J. P. McMahon, A. H. Daws, W. A. Doust, E. C. Young.

*Laboratory Assistants, Junior Grade*—W. E. Grainger, T. G. R. Jones.

*Laboratory Assistants, Non-European*—Ramji Das, J. St. A. M. de Souza, Elisha Nyalondo, Gideon Otieno.

*Malaria Field Overseers*—J. O. Harper, C. Teesdale.

*Tsetse Field Overseer*—C. R. T. Vane.

*Librarian and Stenographer*—Miss J. M. C. Millett (till 10th March), Miss I. E. Bowman (from 10th March).

*Storekeeper*—Max de Souza.

## A.—ADMINISTRATION.

### 1.—Changes in Staff.

Miss I. E. Bowman was posted to the Laboartory to relieve Miss J. M. C. Millett on the 10th March, 1934.

Mr. T. G. R. Jones was posted to Mombasa to relieve Mr. W. L. Titman on the 30th May, 1934.

Mr. J. O. Harper was posted to Kisumu for malaria control work on the 5th June, 1934.

Mr. C. Teesdale was posted to Kakamega for malaria control work on the 4th January, 1934.

### 2.—Leave.

Mr. C. B. Symes returned from leave on the 10th July, 1934.

Dr. D. Harvey returned from leave on the 5th September, 1934.

Mr. E. C. Young returned from leave on the 14th May, 1934.

Mr. W. L. Titman proceeded on leave on the 9th June, 1934.

Dr. F. W. Vint proceeded on leave on the 8th February and returned on the 10th October, 1934.

Mr. W. A. Doust proceeded on leave on the 27th July, 1934.

Mr. Ramji Das returned from leave on the 19th January, 1934.

### 3.—Staff.

There have been no changes with the exception of the departure of Miss Millett and the arrival of Miss Bowman during the period under review. The year, however, has been a very trying one on account of a few cases of illness amongst the staff which to some extent disorganized the work, on account of the lack of any margin of reserve. At one period it was necessary even to borrow from the Medical Division of the Department in order to keep the routine work going. We were fortunate in obtaining the services of Sub-Assistant Surgeon Sawan Singh, an experienced laboratory worker who had just joined the Service, seconded from the Indian Medical Department. He did excellent work while he was with us, and materially relieved the situation.

The junior staff, both European and African, is now becoming more expert in their work and consequently capable of an increased output, and an increased accuracy. Fewer hands are being taken on, so that tuition takes

up less time than formerly, and more of what tuition there is, is devoted to the refresher courses of old hands. This increased efficiency has enabled a certain amount of reorganization to be effected whereby better use can be made of the available staff. This is noted more fully in paragraph 7.

We were all very sorry to say good-bye to Miss Millett who had served whole-heartedly for nearly seven-and-a-half years in the laboratory. We welcome her successor Miss I. E. Bowman.

4.—Buildings.

No change has occurred in this respect. Our native quarters are still quite inadequate to house more than a fraction of the personnel permanently stationed in Nairobi.

The long-hoped-for lawn in front of the main building has again failed to materialise on account of the drought, but, like all agriculturalists, we are still hoping that next season will show a fine growth.

5.—Library.

Few text-books have been added to the Library, on account of the scarcity of money, and the binding of journals is still very much in arrear.

There is a proposal to try to interest the local branch of the British Medical Association in the Library since it is open to and serves the needs of all medical practitioners in the country who care to avail themselves of it.

What is needed is a whole-time Librarian and a grant to cover postages and stationery in order to increase the value of the library many-fold.

6.—Finance.

The cost incurred for the items noted is as follows :—

Staff Emoluments	...	...	...	...	£14,595
Medical and Surgical Stores and Upkeep	...	...	...	...	1,764
<i>Total</i> ...					<u>£16,359</u>

The value of the different products made for use in the country is shown in the following table. The individual products have been revalued in each case. Where an alteration has been made it has been in the direction of reduction.

					Amount	Value (Approx.)
						£
Calf lymph issued for use	..	..	..	..	1,248,939 doses	10,000
Calf lymph placed in stock	..	..	..	..	42,222 doses	350
T.A.B. vaccine issued for use	..	..	..	..	10,170 cc.	500
T.A.B. vaccine placed to stock	..	..	..	..	6,390 cc.	300
Plague vaccine issued for use	..	..	..	..	112,175 cc.	5,600
Plague vaccine placed to stock	..	..	..	..	32,825 cc.	1,600
Rabies vaccine issued for use	..	..	..	..	115 courses	230
Rabies vaccine placed to stock	..	..	..	..	Nil	58
Pneumococcal vaccine issued for use	..	..	..	..	7,060 cc.	350
Pneumococcal vaccine placed to stock	..	..	..	..	21,000 cc.	1,000
Various vaccines, autogenous, issued.	..	..	..	..	85 sets	425
Various vaccines, issued or placed to stock	..	..	..	..	216 courses	108
Bismuth or bismuth oxide issued for use	..	..	..	..	173,260 doses	1,888
Fees collected in cash	..	..	..	..	—	1,812
TOTAL					£ —	<u>£24,221</u>

Work is continually going on endeavouring to find ways of reducing the wastage of stocks and a large degree of success has attended these efforts. In some of the vaccines the wastage has been reduced to a tenth of what it was.

### 7.—General.

The separation of the Government Analyst's Section from the Medical Research Laboratory has at last been authorized to take effect from the 1st January, 1935. The anomaly of the former association was the source of continual annoyance and interference with smooth working. The new arrangement provides for complete independence of the Government Analyst. He is still to be housed in the Laboratory in the rooms he has hitherto occupied, and will be supplied with water, electricity and gas from the Laboratory in return for an agreed upon sum annually. An extension of the telephone from the Laboratory exchange will serve him. The only increased cost to Government is the provision of one African clerk, and the gain is very greatly increased ease in running both the Government Analyst's Department and the rest of the Laboratory, with certainly a greater efficiency.

A trial has been made of putting the routine diagnostic work of two sections under the full charge of Laboratory Assistants. This is really an extension of the idea which has worked well in Mombasa, and it has only been possible on account of the degree of skill which has now been reached by the African Laboratory Assistants, some of whom possess it in very considerable measure. These sections are the Bacteriological under Mr. Mathew de Souza, and the Medical-Biological under Mr. A. H. Daws. Each section has retained the services of the officer who was formerly in charge as adviser in any case of doubt or difficulty though his main energy is expended in other directions. The experiment so far promises very well, and enables the increased amount of work that is being done to be undertaken without a corresponding increase of staff. A still further extension of the idea is contemplated for 1935.

Dr. de Smidt's main work now lies in the production of vaccines and in the very large amount of incidental research connected therewith. This year he has been particularly engaged in the study of pneumonia with a view to its prevention. This disease accounts for a large proportion of the deaths in our hospitals. With the development of mining in the country it is bound to assume a still greater importance, and the experience of South Africa teaches us what an enormous saving in morbidity and mortality can be effected by scientific prevention in which a properly selected prophylactic vaccine plays a large part. In the course of his work Dr. de Smidt was unfortunate enough to contract a very serious attack of pneumonia. During the period of his illness, his work was never allowed to fail owing to the enthusiasm of Mr. Mathew de Souza who was enabled to carry it on, thanks to the provision by the Medical Division of an assistant in the person of Mr. Sawan Singh who did the routine bacteriological work. We are much indebted to him.

Dr. Tonking's work includes all the Kahn and Wassermann tests formerly done in the combined Medical-Biological and Serological section. In addition, he has been engaged in a study with Dr. Harvey of the normal composition of African blood at this altitude. It is essential that such a study should be done without delay as all our work in hospitals and elsewhere dealing with the African in disease as well as much dealing with him in health is based on the unwarranted assumption that his normal standard is the same as that of Europeans at low levels in a temperate climate.

Another change during the year has been the putting of all the ordinary management of the Laboratory in the hands of the Laboratory Superintendent, Mr. F. A. Bailey, only decisions on matters of principle or alterations in procedure being referred to the officer in charge of the Laboratory. This is desirable in itself but was forced upon us by the former need for the officer in charge to undertake a good deal of routine technical work.

Another innovation has been introduced from which very much is hoped. The London School of Hygiene and Tropical Medicine have arranged to send out to East Africa the holder of one of their scholarships to work during its tenure and it is hoped that part, at least, of his time will be spent at this Laboratory. This worker will be engaged upon entomological studies. It is

earnestly hoped that this is only the first of a succession of workers upon diverse problems and that a definite and close liaison may be developed in time to the great mutual benefit of the London School and of this Laboratory. We have here so many conditions and diseases which loudly call for concentrated study by experts in particular lines and so few people who can be spared to work at them, while the London School of Hygiene and Tropical Medicine have trained research workers who only require to have the facilities which we can provide put before them to enable great advances to be made which will have far reaching effects firstly upon health and secondarily upon economics.

An attempt has been made to estimate what proportion of the time and energy of the staff of the Laboratory has been expended upon native and what upon non-native work. It is impossible to make an exact calculation, but a close approximation has been arrived at. It has been found, mainly by actual counts, that somewhat more than 85 per cent of our work is on behalf of the native. In this connection it must never be forgotten that of the residue on behalf of the non-native a very large portion is paid for directly in cash to Government in actual fees for the work done. Practically speaking, except for that done for Government officials, all the work for non-natives is paid for at rates which correspond to the actual cost of such work.

Early in the year the country was faced with a serious menace in the shape of an epidemic of smallpox. This was of a virulent type and, in view of the comparatively susceptible state of the inhabitants, might have proved to be a terrible disaster. Fortunately the Laboratory was able to fulfil all demands for calf lymph made by the Medical Department, with the result that they were enabled rapidly to erect a barrier of immunised people so as to cut off the infected area from the main centres of population. This proved so effective that the infection did not succeed in penetrating to the bigger towns or settlements so that business was not interfered with.

To illustrate the size of the demands for lymph it may be noted that in one day alone as much lymph was asked for as in the whole of 1933, and the demand was supplied the same day.

Apart from the work done in Nairobi and Mombasa which is recorded in detail here, the Laboratory Division carried out examinations and investigations both medical and entomological in every Native Hospital and Reserve throughout the country. The Medical Officers in charge express the opinion that this help is invaluable and enables them to do very much more and better work. Records are kept of the examinations performed and it is hoped in future years that it may be possible to incorporate them in some report or other as these African Laboratory Assistants deserve an immense amount of credit and it is entirely due to them that laboratory help has been available in out-of-the-way places.

#### 8.—Publications by the Staff.

H. D. Tonking :

“A Case of Plasmodium Ovale in an East African Native.” (East African Medical Journal, Vol. XI, p. 166.)

F. W. Vint :

“The Brain of the Kenya Native.” (Journal of Anatomy, Vol. 68, p. 216.)

J. H. Sequeira and F. W. Vint :

“Malignant Melanoma in Africans.” (British Journal of Dermatology and Syphilis, Vol. 45, p. 361.)

R. Daubney and J. R. Hudson, Division of Veterinary Research, and J. I. Roberts, Entomologist, Medical Research Laboratory :

“Preliminary Note on the Transmission of Bovine Haemorrhagic Septicaemia by the Flea *Ctenocephalus felis*, Bouche.” (Journal of Comparative Pathology and Therapeutics, Vol. XLVII, Part 3, September, 1934.)

B.—SECTION OF MEDICAL BIOLOGY.

1.—Staff.

This section was, along with that of Serology, under the charge of Dr. H. D. Tonking till about October. It was then put under Mr. A. H. Daws who assumed full responsibility for it. The native staff varies from time to time, except for one or two senior boys who are considered permanently attached to the section, while the more junior boys alter. As the work of this section covers the greater part of what is demanded from those native Laboratory Assistants posted to the clinical laboratories in the hospitals and Reserves, it is here that most time is spent in training and it is to this section that men are sent for refresher courses.

(a) *Faeces Examinations (Microscopical).*

As usual the table is drawn out to show the numbers of times individual organisms were encountered, no account being taken of whether or not several varieties were present in the same specimen.

TABLE A

	Europeans	Asians	Africans	Total
Ova of—				
Tænia .. .. .	9	7	1,354	1,370
<i>A. lumbricoides</i> .. .. .	16	3	475	494
<i>A. duodenale</i> .. .. .	22	16	1,019	1,057
<i>S. stercoralis</i> (ova and larvæ) ..	19	10	223	252
<i>S. mansoni</i> .. .. .	15	3	204	222
<i>E. vermicularis</i> .. .. .	3	1	27	31
<i>T. trichiura</i> .. .. .	36	25	655	716
<i>H. diminuta</i> .. .. .	1	—	—	1
<i>H. nana</i> .. .. .	—	—	16	16
Cysts and other forms of—				
<i>E. coli</i> .. .. .	94	18	1,481	1,593
<i>E. histolytica</i> .. .. .	87	9	74	170
* <i>E. histolytica</i> .. .. .	23	—	—	23
Charcot-Leyden crystals but no cysts	65	2	43	110
<i>I butschlii</i> .. .. .	16	4	195	215
<i>E. nana</i> .. .. .	26	2	—	28
<i>G. intestinalis</i> .. .. .	40	3	49	92
<i>C. mesnili</i> .. .. .	37	1	72	110
<i>Bal coli</i> .. .. .	2	—	—	2
Undifferentiated flagellate cysts ..	42	22	1,007	1,071

\*Refers to organisms which are probably *E. histolytica* but which on account of the staleness of the specimen cannot be recognized with certainty.

	Europeans	Asians	Africans	Total
Total number of specimens of stools examined .. .. .	1,557	298	5,251	7,106

(b) *Blood Examinations.*

The following blood examinations were carried out :—

TABLE B

	Europeans	Asians	Africans	Total
<i>P. falciparum</i> .. .. .	203 Cr. 3	934 Cr. 81	1,559 Cr. 174	2,696
<i>P. vivax</i> .. .. .	29	228	69	326
<i>P. malariae</i> .. .. .	4	10	31	45
<i>P. ovale</i> .. .. .	1	—	1	2
Mixed infections .. .. .	2	39 Cr. 3	9 Cr. 4	50
Filaria, sheathed.. .. .	—	—	5	5
Filaria, unsheathed .. .. .	—	—	36	36
<i>S. rossi</i> .. .. .	—	—	5	5
<i>L. donovani</i> .. .. .	—	—	1	1
Differential counts .. .. .	356	28	15	399
Total counts .. .. .	43	10	82	135
Negative for parasites .. .. .	1,039	1,605	6,230	8,874
TOTAL ..	1,677	2,854	8,043	12,574

Comparing these results with those of last year, there is seen to be a considerable increase, over 40 per cent, in the number of bloods examined. The great increase in numbers of malarial infections is particularly striking, from 985 to 3,119. Another point worth noting is that the Asians show much the greatest number of infections with *P. vivax*, a fact which one would have expected although the greatness of the preponderance is surprising.

It will also be seen that this year a case of leishmaniasis has been met with. It was of the visceral type, in a native of Kitui who, it is stated, had never left his district except to come to Nairobi.

(c) *Miscellaneous Examinations.*

Forty-nine urines were examined for the presence of schistosome ova. Those of *S. haematobium* were found in four native urines.

In fifty-three cerebro-spinal fluids the cells were counted, three European, four Asian, and forty-six Native.

In forty specimens of blood, the group was ascertained.

### C.—SECTION OF SEROLOGY.

Until the middle of this year, the section of Serology was grouped along with that of Medical Biology. In the course of the re-arrangement of work in the Laboratory, whereby Laboratory Assistants became responsible for certain sections, it was found necessary to separate part of the combined section from the rest. At the end of the year the performance of Kahn and Wassermann reactions was done by Dr. H. D. Tonking who was mainly engaged, along with Dr. D. Harvey, in an investigation of the normal blood of Africans.

Fewer Kahn reactions were carried out than during the previous year, and of those which were done, a greater number were done for the purpose of keeping a check on treatment. This accounts for the greater proportion of negative results.

Negative results	...	...	...	...	...	1,107
Positive results	...	...	...	...	...	935
Doubtful results	...	...	...	...	...	43
Insufficient blood for full reaction, haemolysis or contamination	...	...	...	...	...	157
<i>Total</i> ...						<hr/> 2,242 <hr/>

Wassermann's reaction was carried out upon one hundred and eighty blood sera and upon thirty-four spinal fluids.

### D.—CALF LYMPH SECTION.

#### 1.—Staff.

Mr. Ramji Das has been in charge of the section throughout the year under the supervision of the Senior Bacteriologist. The African staff has not varied except that additional men had to be taken on during the period when a serious threat of smallpox had to be met and countered. They have been kept on temporarily until an adequate reserve of lymph has been built up.

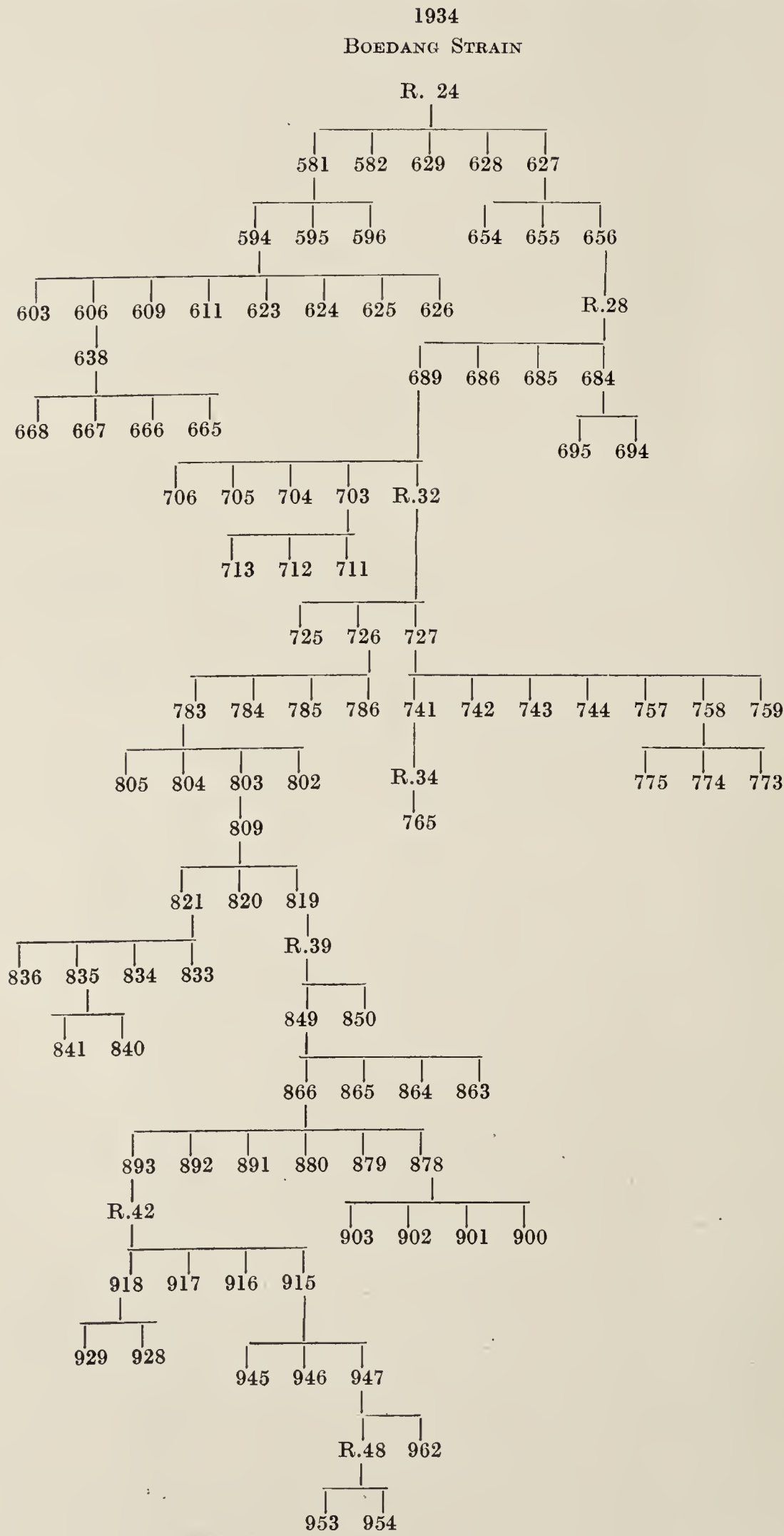
#### 2.—Production of Lymph.

The greatest demands were made on the resources of the section and unprecedented amounts of lymph made and issued. On no occasion did the supply fail and every indent was filled without any delay. Tests were made during the year of the keeping properties of the lymph. A batch was sent to a district near the coast and kept in a warm room on the table of the Medical Officer. After nine weeks it was used with 100 per cent of takes.

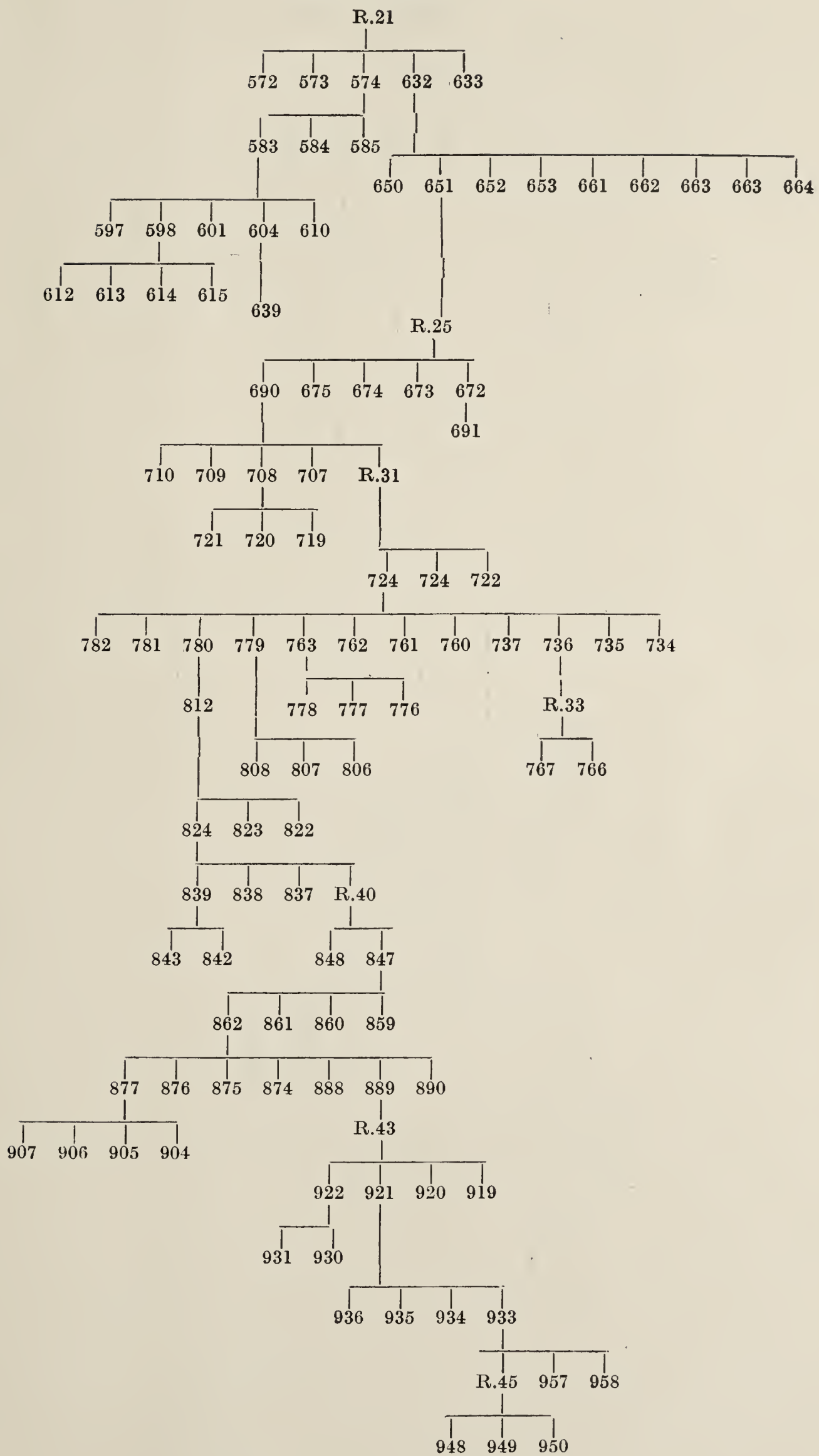
Lymph has been supplied to other countries than Kenya and the revenue derived has paid for a large part of the cost of the section.

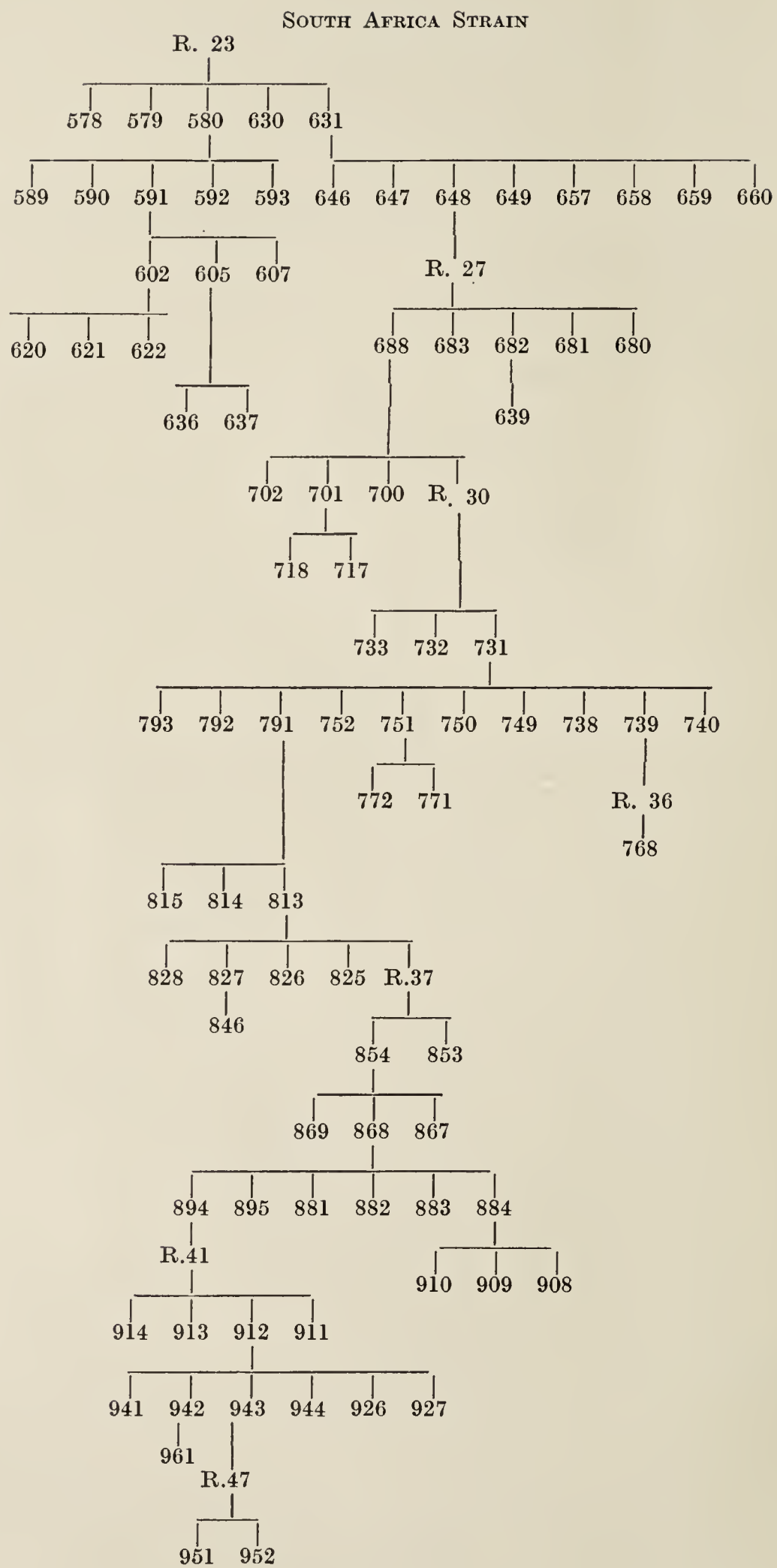


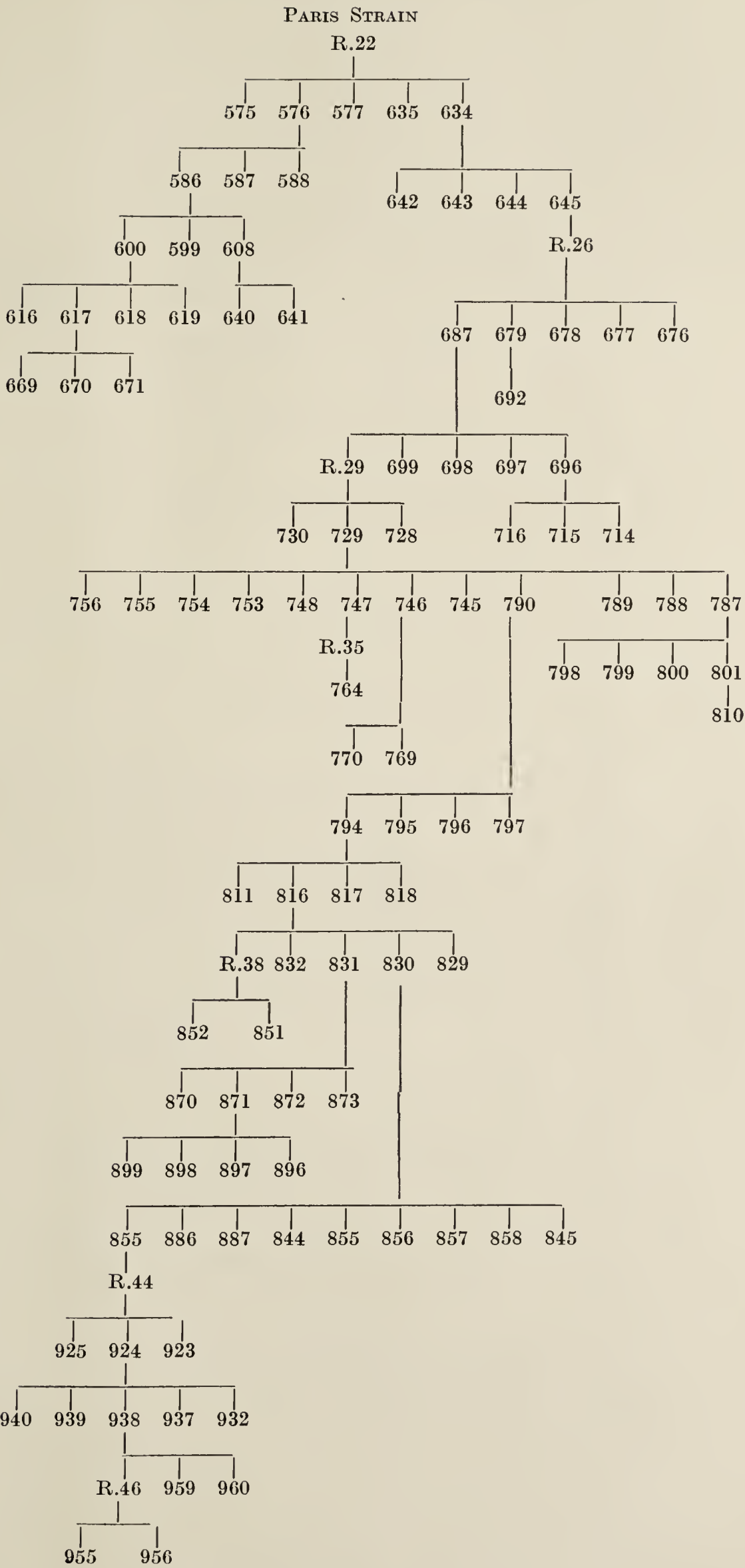
5.—Tables Showing the History of each Lymph Strain.



## BELGAUM STRAIN







VACCINATION RETURNS, 1934

RESIDENCE	Total No. of Persons Vaccinated	SEX		PRIMARY			SECONDARY			PREVIOUS HISTORY UNKNOWN		
		Male	Female	Un- known	Total	Success- ful	Failed	Un- known	Total	Success- ful	Failed	Un- known
Malindi ..	46,505	—	—	—	—	—	—	—	46,505	—	—	46,505
Lamu ..	20,292	10,480	9,812	63	63	—	—	11,845	8,384	—	—	8,384
Machakos ..	209	190	19	3	62	46	13	147	—	—	—	—
Fort Hall ..	164	159	5	7	105	93	5	57	—	—	—	—
Nyeri ..	1,309	968	341	495	499	4	—	810	2	—	—	2
Meru ..	269,242	—	—	69	796	725	2	138	—	—	—	—
Nakuru ..	522	512	10	—	454	454	—	68	268,308	—	—	268,308
Eldoret ..	312	239	73	44	270	181	45	42	—	—	—	—
Kapsabet ..	128	116	12	—	114	112	2	2	—	—	—	—
Kisii ..	12	7	5	1	7	3	3	4	12	—	—	12
Kericho ..	487	486	1	180	332	116	36	155	1	—	—	—
Kakamega ..	4,414	4,380	34	723	992	150	119	3,422	—	—	—	—
Kisumu ..	5,952	5,843	109	6	25	19	—	470	5,457	—	—	5,457
Kitale ..	69	53	16	2	64	62	—	5	—	—	—	—
Nanyuki ..	2,078	1,476	602	655	655	—	—	664	759	—	—	759
Nairobi ..	1,465	1,367	98	—	190	188	2	836	439	—	—	439
Moyale ..	10,740	5,955	4,785	—	—	—	—	—	—	—	—	—
Lodwar ..	715	300	415	254	708	435	19	7	—	—	—	—
Mombasa ..	1	—	1	—	1	—	1	—	—	—	—	—
Digo ..	32,258	16,049	16,209	—	—x	—	—	—	32,258	—	—	32,258
Lokitaung ..	812	669	143	84	381	276	21	46	385	—	—	385
Tambach ..	50	36	14	—	46	44	2	2	—	—	—	—
Kitui ..	7,499	3,386	4,113	2,783	2,784	1	—	4,715	—	—	—	—
Kilifi ..	90,000	—	—	—	—	—	—	—	90,000	—	—	90,000
TOTAL ..	495,235	52,671	36,817	5,369	8,548	2,909	270	23,437	452,510	860	1,433	452,509

**E.—SECTION OF PATHOLOGY.****1.—Staff.**

In February Dr. Vint went on leave and his duties were carried out by the Senior Bacteriologist until October when Dr. Vint returned.

Owing to pressure of other work and sickness of the staff, Medical Officers in the district were asked to reduce as far as possible their requests for post-mortem examinations and examinations of tissues. The result is seen in the fewer number of specimens examined.

**2.—Post-mortem Examinations.**

During the year ninety-seven post-mortem examinations were carried out.

**EUROPEAN—**

Pneumococcal septicæmia .. .. .	1
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**AFRICAN—**

Acute yellow atrophy of liver .. .. .	1
---------------------------------------	---

Asthenia and epilepsy .. .. .	1
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Blackwater fever .. .. .	1
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Diabetes .. .. .	1
------------------	---

Food deficiency .. .. .	2
-------------------------	---

Gas gangrene.. .. .	2
---------------------	---

Gastro-enteritis .. .. .	4
--------------------------	---

Hæmorrhage, ectopic gestation .. .. .	1
---------------------------------------	---

Intestinal obstruction .. .. .	1
--------------------------------	---

Malaria .. .. .	4
-----------------	---

Malaria, cerebral .. .. .	1
---------------------------	---

— 5

Meningitis, meningococcal .. .. .	1
-----------------------------------	---

Myocarditis .. .. .	4
---------------------	---

Nephritis, acute .. .. .	1
--------------------------	---

„ interstitial .. .. .	1
------------------------	---

„ parenchymatous .. .. .	1
--------------------------	---

— 3

Pleurisy .. .. .	1
------------------	---

Pneumonia, lobar .. .. .	11
--------------------------	----

Pneumonia and meningitis.. .. .	2
---------------------------------	---

Pneumococcal septicæmia .. .. .	3
---------------------------------	---

—16

Broncho-pneumonia .. .. .	3
---------------------------	---

Poisoning, food .. .. .	2
-------------------------	---

Septicæmia .. .. .	4
--------------------	---

Shock .. .. .	1
---------------	---

Sinus thrombosis .. .. .	1
--------------------------	---

Suffocation .. .. .	3
---------------------	---

Tuberculosis .. .. .	12
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Tumours :

Cancer .. .. .	1
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Cerebral glioma .. .. .	1
-------------------------	---

Hypernephrome .. .. .	1
-----------------------	---

Sarcoma .. .. .	2
-----------------	---

— 5

Typhoid .. .. .	2
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Violence, etc. :

Drowning .. .. .	2
------------------	---

Fractured skull .. .. .	7
-------------------------	---

Hæmorrhage from wounds .. .. .	1
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Gun-shot wounds .. .. .	4
-------------------------	---

Strangulation .. .. .	2
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Wounds of spinal cord .. .. .	2
-------------------------------	---

—18

Unknown, due to advanced putrefaction .. .. .	1
---	---

TOTAL .. 97

**3.—Histological Examinations.****EUROPEAN—**

Tumours, benign .. .. .	8
-------------------------	---

„ malignant .. .. .	3
---------------------	---

Curettage, non-malignant .. .. .	10
----------------------------------	----

Inflammatory .. .. .	22
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Malaria .. .. .	1
-----------------	---

TOTAL .. 44

**ASIATIC—**

Tumours, benign .. .. .	3
-------------------------	---

„ malignant .. .. .	2
---------------------	---

Curettage, non-malignant .. .. .	1
----------------------------------	---

Inflammatory .. .. .	3
----------------------	---

TOTAL .. 9

AFRICAN—							
Tumours, benign :							
Adenomata..	..	..	..	..	..	..	6
Cysts ..	..	..	..	..	..	..	7
Fibromata ..	..	..	..	..	..	..	11
Lipomata ..	..	..	..	..	..	..	4
Myomata ..	..	..	..	..	..	..	1
Osteomata ..	..	..	..	..	..	..	1
Papillomata ..	..	..	..	..	..	..	5
							—35
Tumours, malignant :							
Carcinomata ..	..	..	..	..	..	..	19
Endotheliomata ..	..	..	..	..	..	..	6
Epitheliomata ..	..	..	..	..	..	..	20
Melanomata ..	..	..	..	..	..	..	10
Mixed tumour of parotid ..	..	..	..	..	..	..	1
Sarcomata ..	..	..	..	..	..	..	21
Teratomata ..	..	..	..	..	..	..	6
							—83
Inflammatory ..	..	..	..	..	..	..	77
Syphilitic ..	..	..	..	..	..	..	5
Tuberculous ..	..	..	..	..	..	..	20
Malaria ..	..	..	..	..	..	..	1
Hodgkin's disease ..	..	..	..	..	..	..	3
Normal tissue ..	..	..	..	..	..	..	2
POST-MORTEM TISSUES—							
Tumours, carcinoma ..	..	..	..	..	..	..	7
„ Sarcoma ..	..	..	..	..	..	..	4
							—11
Other conditions, not tumours ..	..	..	..	..	..	..	114
Animal tissues ..	..	..	..	..	..	..	23
							—
TOTAL EXAMINATIONS ..							427
							—

F.—BACTERIOLOGICAL DIVISION.

1.—Staff.

This division has been reorganized in the course of the year. It consists of three sections, namely, the Media Section, the Routine Diagnostic and the Research Sections, the personnel of which do not change. The Medical Officer in charge of the whole Division is Dr. F. P. G. de Smidt and he is particularly responsible for the Research Section.

Mr. W. A. Doust is in charge of the Media Section in which cleaning and sterilizing of glassware for the whole laboratory, preparation of all media and sterile solutions, distilled water and so on is carried on, as well as bottling, issuing and recording. He also finds time for a certain amount of incidental research on media and bacterial nutrition. During the year Mr. Doust has been on leave from the 27th July till the 31st December and his duties have been carried on by Mr. E. C. Young. The African personnel of this section consists of Johanna Kitau a trained African Laboratory Assistant, and two lower grade African Laboratory Assistants.

The Routine Diagnostic Section is under the charge of Mr. J. St. A. M. de Souza. His duties are examination of and reporting on routine specimens : manufacture of anti-plague vaccine ; maintenance by passage of the fixed virus for anti-rabic vaccine, and extraction of brain and cords for this ; manufacture of certain stock therapeutic vaccines ; preparation of autogenous therapeutic vaccines, including those of the agglutinating coliform type ; collection and maintenance of cultures for gonococcal, anti-catarrhal and other stock vaccines ; preliminary cultural part of water analyses ; keeping of stocks, and the issuing, of therapeutic anti-sera ; general maintenance of the laboratory and equipment in running order. This assistant also carries on research work, takes a share in the treatment of patients by vaccines, and assumes the technical duties of the officer in charge of the Section during his absences on leave. He is helped by a highly trained African Assistant, Oyier, and a more junior African Laboratory Assistant.

The Research Section consists of Dr. de Smidt himself and such assistance as he may from time to time require from other sections of his division.

In regard to the Media Section staff, the large amount of work involved in the production of prophylactic vaccines for issue not only to Kenya but also to the neighbouring territories will be readily understood, and special credit is due to them for the very skilful, efficient and zealous manner in which these duties have been performed. A quite special demand upon the Media Section staff is made also in the large quantities of blood agar needed for work on pneumonia.

A considerable amount of time and effort is spent upon the training of African learners in both the Media Section and the Routine Diagnostic Section, and in the latter the officer in charge of the Division is again fortunate in an assistant who can be relied upon implicitly in the discharge of his responsibilities.

The duties of the officer in charge of the Division consist in the cultural part of the manufacture of anti-pneumonia vaccine, and the bacteriological and serological work in pneumonia entailed thereby; the maintenance of standard plague culture by passage for vaccine manufacture, and experimental work in relation to this; the maintenance of typhoid-paratyphoid cultures in a smooth state for vaccine preparation; the qualitative part of water analyses; and various other duties including and entailed by the vaccine treatment of patients and the general control of the Section.

## 2.—Routine Work.

The number of specimens received for various examinations during the year total 3,344, and are divisible into :—

- A. Specimens for microscopical investigation, 2,300.
- B. Specimens for cultural examination, 1,044.

The more important of these are tabulated below :—

*Anthrax*.—One positive case, cutaneous.

*Diphtheria*.—Seven positive throat swabs.

*Dysentery*.—Twenty-six specimens of stools yielded strains of the Flexner group, two yielded bacillus of Schmitz, eighteen yielded bacillus of Shiga, and three yielded bacillus of Sonne. In regard to the Shiga bacillus, it will be seen in the Report for 1933 that this appeared in June of that year apparently for the first time in the records of the Laboratory, with a definite history of importation from Bombay, and subsequently gave rise to nine other cases in Nairobi during the same year.

*Typhoid*.—*B. morgani*: *Salmonella morgani* was recovered from six specimens of pathological faeces. No other *Salmonellidae* came to hand during the year. *B. typhosus* was recovered only twice, from blood culture and stool.

*Undulant Fevers*.—No positive cultures obtained.

*Leprosy*.—One hundred and two specimens of tissue scraping and nasal exudate were found positive.

*Tuberculosis*.—*Sputa*: Out of 1,255 specimens examined, 382 were returned as positive. Two specimens of pus, source not specified, were found to contain tubercle bacilli, and also one specimen of urine.

*Gonorrhoea*.—One hundred and ninety-seven.

*Conjunctivitis*.—Kochs-Weeks bacilli were present in thirteen cases, bacilli of Morax in three, and gonococci in three cases.

*Plague*.—A very small number of rats found dead came for examination, none of which were found to be positive. The prolonged absence of plague from Nairobi district corresponds to an abnormally dry period with sub-normal rainfalls.

*Meningitis*.—Eleven specimens of cerebro-spinal fluid contained pneumococci, two influenza bacilli, and one a type of streptococcus.

### 3.—Water Analyses.

Twenty-one samples of water were bacteriologically examined.

### 4.—Vaccine Preparation.

(a) *Autogenous Vaccines*.—One hundred and twenty-eight autogenous vaccines were made for various conditions. Of these, thirty-six were of the ‘‘agglutinating coliform’’ type for treatment of rheumatisms and of parenteric conditions secondary to amoebiasis.

(b) *Vaccine treatments*.—Forty-six patients have been treated by vaccine for various conditions, including rheumatism and amoebiasis.

In addition to these, many inoculations with T.A.B. have been carried out; and a considerable number of European children have been inoculated with T.A.F. prophylactic.

(c) *Stock Vaccines*.—Stock vaccines were prepared and maintained, comprising *anti-catarrhal*, *staphylococcal*, *streptococcal*, *gonococcal*, etc. A new departure has been the manufacture of *detoxicated anti-gonococcal* vaccine by the method of Price and King. A very considerable quantity of this has been issued to various quarters, and a very satisfactory number of successful results from its use has been reported.

#### *Prophylactic Stock Vaccines.*

(d) *Typhoid-paratyphoid Vaccine*.—Doses prepared: 16,560. Doses issued 10,170. The vaccine is made by the R.A.M.C. method, using smooth cultures of a Kenya strain of *B. typhosus* and *Paratyphosus B*, and the standard Mears strain of Para A.

(e) *Anti-plague Vaccine*.—Doses prepared: 145,000. Doses issued: 112,175. Of these, 36,700 doses were issued to Uganda and 5,000 to the Belgian Congo.

(f) *Anti-rabic Vaccine*.—One hundred and forty-four courses were prepared, and 115 courses issued. Of the latter, forty-six were issued to stations in Tanganyika. The vaccine, carbolized suspension of rabbits’ brain and cord, is made in two strengths, 2.5 per cent, and 5 per cent. The virus used is the Paris virus, adopted by recommendation of the Pasteur Institute of India. After several failures, this virus was at last received in a viable state in May, thanks to special arrangements which were kindly made for its satisfactory transport from Kasauli by the Director of the above-named Institute.

The scales of dosage are based upon the most recent procedure of the Kasauli Institute, and a special form for reports on treatments, embodying a broad classification of bites, scale of dosage advised, and other essential details, is distributed to medical officers concerned with anti-rabic treatment for their guidance.

The reports received relate to twenty-six cases of bites from animals suspected of rabies in Kenya; one of these was European, the remainder were natives. From the Medical Officer, Musoma, Tanganyika, are reported nine cases of bites derived from three dogs, the patients being natives. Of these, an adult male who came for treatment thirty-nine days after being bitten, is reported as having died after the elapse of a further fifty-five days from the end of the period of fourteen days’ treatment. This death is regarded as due to rabies from the fact that a child who was bitten by the same dog but who did not come under anti-rabic treatment died of rabies.

Of the Kenya cases, seven were due to dogs in which rabies was not verified, while ten were bitten by jackals which are therefore to be regarded

as having been rabid although this was not pathologically verified. No other deaths after anti-rabic treatment are reported nor any "paralytic accidents".

In the scales of dosage of vaccine advised, the amount of brain and cord substance varies from 1,400 to 7,000 mgms. in one course of treatment.

(g) *Anti-pneumonia Vaccine*.—After considerable experimentation in broth culture of pneumococci, and in the concentration of pneumococcus broth cultures to the required degree, a very satisfactory process has been evolved for the manufacture of a group anti-pneumonia vaccine designed mainly for prophylactic use. In this, great credit is due to the Laboratory Assistant, Mr. E. C. Young, acting in charge of the Media Section, who devised a sufficiently rapid and very cleanly and efficient technique for the concentration and re-suspension of the broth cultures by a filtration process. To his admirable work in the preparation of the required culture broth of special nutrient qualities the success of this vaccine is also largely due. The culture broth is very cheaply made, being a trypsinated broth with a basis of bullock's heart, and condemned bullock's hearts are used exclusively which are obtained gratis from the abattoir by the courtesy of the Town Clerk, Nairobi. The trypsin-amylopsin liquor needed, which would otherwise form an expensive item, is also made by Mr. E. C. Young from pigs' pancreas which is obtained gratis in the same way.

The constitution of the vaccine is imitated from that originated by Sir Spencer Lister, Director of the South African Institute for Medical Research, and used in his classical work on pneumonia in the Rand Mines. Its strength is therefore 8,000 millions of cocci per c.c., and the protective course consists of three injections of 1 c.c. at weekly intervals. Toxic effects from a dose are generally absent or inconsiderable. The Nairobi vaccine was intended to contain the eight types of pneumococci which during the last two-and-a-half years have been most prominent as causatives of pneumonia in the district; but actually so far it has only contained six of these types. The reason for this is that owing to a temporary dearth of pneumonia in Nairobi district since the vaccine began to be made, the two least common of the eight types did not happen to be collected in the course of the routine work of typing pneumonia cases.

Details of the proportionate pneumococcal type incidence in Nairobi district during the year are given below. Since, as is described below, three of the Group IV types which are prominent in Nairobi are also prominent so far afield as in New York, and two of these are also characteristic in South Africa, it was assumed that a vaccine made with the more outstanding types of Nairobi might be valid in outlying areas of Kenya and perhaps also in the adjacent territories. On this assumption the vaccine was tentatively prepared with the prevalent types mentioned above, which are here called Kw.D, Kw.J and Kw.L, in addition to the universal standard types I, II and III, and the issues of it have so far been made gratis from the experimental standpoint.

The bulk of the issues of this anti-pneumonia vaccine have been taken by Dr. Charles Searle, Medical Officer to the gold-mining company Risks, Ltd., in Kakamega, whose labour had been severely affected by pneumonia during the year, with the high case-mortality rate of 30 per cent. Our gratitude is due to Dr. Searle for the energy and scientific ability of his work in this connection, and for the great trouble he has taken to prepare helpful reports and charts. In September an extensive series of inoculations was carried out by him among the native labour of the gold workings, and the reports received from him and others on the effects of the vaccine in putting an end to the pneumonia epidemic have been highly encouraging to further effort.

A grave difficulty here is the impossibility for a worker in Nairobi to keep a check on the bacteriology and the very possible variation in the incidence of pneumococcal types causative of pneumonia in a locality so far distant as Kakamega. It is hoped that this difficulty will be removed by the

proposed installation of a first-class laboratory assistant with satisfactory laboratory equipment in the very important medical area of Kisumu. This would enable cultures from pneumonia cases to be collected almost on the spot, and sent either alive or in the shape of formol-saline suspensions to the Nairobi laboratory for analysis.

5.—Research Work.

(a) *Pneumonia*.—What was originally a research in the sense of being an investigation into the hitherto quite unknown bacteriology of pneumonia in Kenya has long become a routine which takes up a great deal of time and effort. By the indispensable help of Dr. C. R. Philip and his staff of the Native Hospital, and others, in providing morbid material, the routine of typing pneumonia cases has been continued, the results of which are tabulated below.

*Total of Cases Typed* : 221. Of these, thirty-one yielded streptococci and other bacteria not pneumococci, while the remaining cases yielded pneumococci generally in pure or almost pure culture, but sometimes admixed with *B. Friedlander* or *H. influenzae* to an extent suggesting a dual secondary complication of a possible primary infection by filterable virus. Table 1 gives the main pneumococcal type incidence.

TABLE 1.

Type 1	II	III	Group IV
28.4 per cent	7.9 per cent	9.5 per cent	54.2 per cent

The figures reveal a great increase in the Type 1 infections upon the record for last year, which was 17.2 per cent, with a corresponding reduction in the proportion of Group IV infections from last year's figure of 67.4 per cent.

*Case-mortality*.—The figures provided by Dr. Carman in reference to pneumonia in the Nairobi Native Hospital are as follows :—

Total case-mortality, 20.2 per cent ; for Type 1 infections alone, 28.9 per cent ; for Group IV infections alone, 9 per cent.

*Pneumococcus "Group IV"*.—The work of serological analysis of the Group IV cocci collected was delayed by the worker being absent for three months of sick leave, although Mr. de Souza carried on the work as far as time allowed. Table II shows the proportionate incidence of the types which have so far been separated.

TABLE II

<i>Per cent</i>				<i>Per cent</i>			
Type Kw. B	..	..	1.6	Type Kw. O	..	..	1.6
„ C	..	..	1.05	„ P	..	..	Nil
„ D	..	..	8.4	„ Q	..	..	0.5
„ F	..	..	0.5	„ R	..	..	0.5
„ G	..	..	0.5	„ S	..	..	1.6
„ I	..	..	1.6	„ T	..	..	Nil
„ J	..	..	4.2	„ U	..	..	1.05
„ K	..	..	1.05	„ V	..	..	3.2
„ L	..	..	5.3	„ W	..	..	1.05
„ M	..	..	1.05	„ X	..	..	0.5
„ N	..	..	1.05	Unclassified	..	..	17.9

Types A, E and H correspond to Types I, II and III.

The types included in the group anti-pneumonia vaccine described above accounted for 64 per cent of the pneumonia and pneumococcal meningitis infections of the year, exclusive of those cases which did not yield pneumococci and which probably, therefore, were mostly caused by other bacteria. The abnormally large proportion of non-pneumococcal pneumonic infections may be related to the abnormally dry and dusty climatic conditions which have for so long prevailed.

(b) *Pneumococcal Meningitis*.—Of the thirteen pneumococcal cerebro-spinal fluids types, six were Type 1, three were Type Kw.L, and the remainder were types Kw.B., Kw.G, Kw.I and Kw.X. All of these cases, of course, were fatal.

*Type-incidence in relation to severity of infections.*

From notes given by Dr. Philip, it appears that the majority of the severe and fatal pneumonias were due to Type 1 infections. But each of the types separated and tabulated above are evidently capable of giving rise to dangerous pneumonia in Africans, and certain of the commoner Group IV types have been associated with severe cases in Europeans and Indians, only a few of which, however, have come to be typed.

The six pneumococcal types comprised in the anti-pneumonia vaccine have accounted during the year for 77 per cent of the severe and fatal cases in the Nairobi Hospital.

*Correlation between pneumococcal type distribution of Nairobi and other areas.*

As regards Kampala, Dar es Salaam and Nairobi, it is expected that work in collaboration along this line will shortly be on foot. The procedure agreed upon consists in the sending of formalinized saline suspensions of bile-tested cultures to Nairobi for testing by agglutinating sera of the Nairobi type series. Up to date a few such suspensions have been received from the Chief Medical Officer of the Kilo-Moto Mines, Belgian Congo, who also has agreed to collaborate. One of these cultures was identified with the Nairobi type Kw.O.

By the courtesy of Sir Spencer Lister of the South African Institute for Medical Research, it has been possible to identify two of the important Nairobi types with prominent types in Lister's South African series. And Dr. Griffith, Ministry of Health, has kindly tested suspensions sent him from this laboratory against the sera of the pneumococcal type of Miss Georgia Cooper, Bureau of Laboratories, Health Department, New York City. The results thus so far obtained are as in Table III.

TABLE III

New York	Johannesburg	Nairobi
Type V	Lister "Group" A	Kw. L
Type VII	Lister "Group" K	Kw. J
Type VIII	?	Kw. D

Reference to Lister's classical work on anti-pneumonia immunization reveals the importance of the first type above in the Rand area during the past twenty years. And from a table published by Professor Park, these three types appear to be represented in New York to a similar degree of prominence as in the Nairobi district.

(b) *Plague*.—Experimental work in plague was recommenced in the latter part of the year, but a report on results would be very premature.

(c) *Tuberculosis*.—In accordance with the Inter-territorial Research Scheme, work has been undertaken by Mr. J. St. A. M. de Souza for the typing of the native tuberculosis cases, which are mainly pulmonary, of Nairobi district. It has been decided to experiment with Jensen's modification of Lowenstein's medium. A paper describing the very successful use of this medium, read before the Norwich Congress by Dr. Evelyn Holmes, was published in the *Journal of State Medicine* for October, and the first batch of this medium, which is by no means simple in preparation, was made by Mr. E. C. Young in this laboratory in the same month. Practice is needed for successful preparation and use of the medium; but its first trials in this laboratory have been reasonably successful. The few cultures so far isolated from native cases of pulmonary tuberculosis are each of the human type. The medium has the advantage among others of admitting of sufficiently reliable direct typing of human and bovine bacilli by the characters of their growths *in vitro*.

**G.—SECTION OF ENTOMOLOGY.****1.—Staff.**

There were no changes in the staff.

Mr. C. B. Symes was on leave till the 12th July, 1934.

**2.—Mcsquitoes and Malaria.**

Work connected with the control of malaria has been carried out as follows :—

(a) *Nairobi*.—Continued routine collection of larvae and adults. Daily reports are sent to the Medical Officer of Health for purposes of control. In December it was found necessary to cut down our collections and to concentrate on about half the areas previously dealt with. These areas are representative of the whole township area so that our records still represent normal anopheline output.

A sharp outbreak of malaria in May and June in the lower areas of the town was the accompaniment of a considerable increase in numbers of *A. gambiae* in the Nairobi River swamp areas.

The effort in 1928 to abolish murram pits and quarries as breeding grounds is being rapidly nullified by the apparent uncontrolled development of new and extensive excavations, particularly on the eastern side of the municipal area.

(b) *Kisumu*.—The routine control with paris green has continued satisfactorily. Detailed records of anopheline activity are still being made as a check on this method.

The reclamation of the lake shore has continued. Work has been started by the Medical Officer of Health and Sanitary Inspector on the papyrus belt at the gulf head, with labour supplied by the Superintendent of the Prison. Progress so far shows that the task though heavy is not by any means impossible. The aesthetic value of such work, coupled with the abolition of many acres of *A. funestus* breeding grounds more than warrants the effort. As facilities permit the clearing of lake shore vegetation will be extended until protection has been provided for the air port area. Not until this is done can Kisumu air port be anything but a danger.

A large area on the south side of Kisumu has been cleared of bush. The effect of this work on incidence of *A. funestus* in the adjoining residential area is most striking. This species breeds over an enormous swampy area about a mile from the township boundary. Its breeding grounds are too extensive to be dealt with at present. Production still goes on, but the clearing of bush has constituted an effective barrier between breeding grounds and the town.

In February Mr. J. O. Harper, Field Assistant, was posted to Kisumu to take over the more technical side of anopheline surveys and control. He is now in charge of all the work there during the absence of Mr. Hewitt.

Kisumu is rapidly becoming the commercial centre for the Nyanza gold-fields. It is also one of the most important air ports on the African route. Malaria is definitely being checked; but more and more effort must be applied to ensure that it does not interfere with these important developments.

(c) *Kakamega*.—Mr. Teesdale, Field Assistant, took over anti-malaria work from Mr. J. O. Harper in February.

Control of water sources is gradually being accomplished. Routine oiling is carried out as a temporary measure whilst the more permanent training and canalising of streams goes on. Tree planting at the head of seepages and streams is helping to reduce surface water. About twelve acres of gums have been planted this year, and bush clearing was recently made possible by the provision of additional prison labour. This measure discloses many hidden breeding grounds and also abolishes harbourage for adult anophelines.

Some ten acres have been cleared so far. The effort is likely to be a big one; the heavy rainfall and very fertile soil produce particularly dense and quick growing vegetation.

Seven concrete emplacements have been installed for domestic water supplies and one for cattle. Two concrete washing (clothes) and two bathing places have also been constructed. Difficulty is being experienced, however, because of the frequent collapse of banks during heavy rains. The most we can expect to do with present facilities is work which will last a few years—until more funds make possible a piped water supply and a permanent treatment for all streams.

A sharp seasonal rise in malaria during May and June appears to have coincided with a large output of *A. costalis* in the Isioha River. Control measures have now been extended to include this river.

Considerable attention is being paid to gold mining areas. Some seventy reports have been provided by the Field Assistant on anopheline breeding on mining properties. During the year a visit of some weeks' duration was paid to one mining property by one of the field staff of the London School of Hygiene and Tropical Medicine.

It is all to the good that mining companies realize the value of such work and are willing to pay well for it, and we appreciate the innovation. Furthermore as this Department is much concerned with the control of malaria in all parts of Kenya it is anxious to facilitate efforts of this kind by providing a considerable amount of local knowledge and every facility for dealing with material collected during investigations.

(d) *Kitui*.—The work commenced last year is being continued. One of our trained Africans is supervising small drainage schemes and their maintenance, and oiling. He is also responsible for larval and adult collections as a check on control measures. The Medical Officer reports very favourably on his work.

(e) *Fort Hall*.—Surveys were started here in June. Two Africans are supervising temporary oiling and simple canalisation of streams.

(f) *Digo*.—The African staff was reduced to one in the early part of the year. He is engaged on survey work and the supervision of oiling in and around Msambweni.

(g) *Meru*.—One African is still engaged on survey work in Meru and the district. It is hoped that a definite scheme of control may be initiated as the result of his investigations. *A. marshalli* occurs as a "domestic" species in some parts of this district.

(h) *Kilifi*.—One African is carrying out initial mosquito investigations in Kilifi, Malindi and some outside districts. A definite scheme for control of anophelines will be drawn up as soon as possible during 1935.

(i) All identifications of specimens collected in the districts mentioned have been made in the Laboratory, and reports sent out accordingly.

### 3.—*Culex* and *Aedes*.

Some effort is being made to deal with the considerable accumulation of material gathered during the past few years. The distribution of *aedes* species, particularly of those elsewhere associated with yellow fever, is being studied. Where possible, the control of domestic species is being intensified.

### 4.—Carriage of Insects in Aeroplanes.

Searches have been made in planes arriving in Kenya from north and south with interesting results. In spite of "flitting" carried out in planes at aerodromes in the Sudan and Uganda, we continued to find insects including mosquitoes.

Whilst flying and air port activities were confined normally to daylight, we found representatives of only a few genera—culicines, anophelines, tabanus, musca. Recently we have captured moths, beetles, grasshoppers, cockroaches, ephemerids, chironomids, various hymenopterons, bees and plant bugs. This variety is undoubtedly due to the fact that certain planes must now undergo refuelling, cleaning and general preparation after dark with the aid of artificial light.

The fumigation of aeroplanes with celophite (discs impregnated with HCN gas) is being tested, and an insect trap designed to catch escaping insects during disembarkation of passengers and baggage from aeroplanes is being tried out in Kisumu. A special report will be prepared on this subject.

#### 5.—Tsetse Fly and Sleeping Sickness.

(a) *Kaniadoto*: (*Colonial Development Fund*).—Six clearings varying from 600 yards to 1,000 yards long have been completed on the Nthiwa and Kuja Rivers in South Kavirondo. Flies in blocks of bush between these clearings have been subjected to intensive trapping, hand catching and pupa destruction. The reduction of tsetses is promising. Marking experiments have shown that a few flies manage to cross clearings of 600 yards. A flooded river appears to facilitate such activity.

The area partially reclaimed is being coveted by numerous local families. Organized settlement will be arranged as soon as risk of infection has been eliminated.

Preparations for a similar experiment against *G. pallidipes* have been started in the Lambwe Valley. The work here will henceforth be under the control of the Veterinary Department.

(b) *Maboko Island*.—In co-operation with Mr. C. F. M. Swynnerton, trapping and observations have continued. The density is very low. It is probable that traps may not be very effective in such density.

(c) We have kept in touch with the clearing work being done by the Administration on our earlier recommendation in Kadinu, Seme and Sakwa, Central Kavirondo. This work is excellent. It is providing large areas of fertile agricultural lands for development and bids fair to constitute the first steps in a "back to the Lake" movement. Such a movement, however, is being controlled.

One of the last clearings made at Sakwa has been provided with a jetty from which the local cotton crop has already been exported by dhow. This jetty is proving of the greatest value to the gold mining people situated in the district. Great credit is due to Mr. R. Southby, Reconditioning Officer, and the Administrative Officers concerned with this method of reclaiming tsetse areas.

Some thirty S.S. traps have been constructed by our African carpenter for operation in the Port Victoria area in the near future.

(d) Close touch has been maintained with gold mining development in or near *G. palpalis* areas. A memorandum containing recommendations to prospectors and miners working in these areas has been provided for distribution. Through the valuable co-operation of the Commissioner for Mines we have been able to interview individual applicants for mining concessions and to instruct them in the measures necessary for the protection of themselves and their labour against contact with *G. palpalis*.

(e) Work has been continued on the investigation of tsetse foods by the precipitin method. Considerable batches of specimens from the Director, Tsetse Research, Tanganyika, are being dealt with. A first report on this work is being prepared.

(f) The discovery of *G. swynnertoni* amongst specimens collected by the Veterinary Entomologist in the south-west Masai district explains the infection contracted by a European hunter in that district in 1933. When facilities permit, steps will be taken to investigate the area involved and to suggest possible measures, at least for the protection of traffic routes.

(g) Maps showing the known distribution of (a) all species of *Glossina* and (b) *G. palpalis* in Kenya have been submitted for distribution.

(h) Simple tests have been made with spray fluids for the control of bed bugs in African dwellings. It is considered that an effective control in these will reduce infestation in houses occupied by Europeans. A report is being prepared.

(i) The breeding of flies (mostly *Lucilia* and *Chrysomya* spp.) in pit latrines is a serious problem in many districts. Test applications of certain cheap and available insecticides, but not bactericides, have been carried out. Paradichlor-benzene appears to offer promising results. A report is being prepared.

(j) Health exhibits have been prepared for agricultural shows held in various districts during the year. Mission authorities are becoming keen on this form of propaganda.

#### 6.—Bovine Haemorrhagic Septicaemia.

We have co-operated with research officers of the Veterinary Research Laboratory in experiments on the possibility of transmission of haemorrhagic septicaemia to mice by the agency of fleas. During outbreaks of the disease, it had been noted that the younger cattle, particularly unweaned calves, were heavily infested with *Ctenocephalus felis strongylus*, Jord., and we were able to collect, on an average, about 200 per animal.

The fleas collected were transferred to jars containing white mice, but these proved very unsatisfactory as experimental animals, owing to the manner in which they hunted and killed any flea that alighted on them. After the preliminary unsatisfactory results, the fleas were kept for over twenty-four hours before release, in the hope that in their starved condition, they would be unable to cope with a gross infestation of hungry fleas.

In the first experiment, only one mouse out of thirteen contracted septicaemia. In the second experiment, only one mouse out of eight contracted and died of the disease. Only in the jar containing the second dead mouse were live fleas recovered at the end of the experiment. It appears justifiable to suggest that in both instances successful transmission was effected with *Ctenocephalus felis strongylus* as vector. The five recovered fleas were transferred to another mouse but were killed almost immediately.

*Ct. felis strongylus* is a species to which future work is being devoted, as it appears to be one of the most likely vectors of disease to both humans and animals. It appears to be ubiquitous, and in view of its prevalence on Africans, it appears quite probable that it plays a role in the transmission of some of the obscure diseases of the African population. During the drought of the last two years, this flea has assumed a preponderance in numbers, and numerous complaints are being received of its activities by all races.

#### 7.—Plague.

During the year, attention has been devoted almost exclusively to a close investigation of the hyper-endemic plague area of Keruguya, and particularly, the causes of plague in that area and suitable methods of control. This area possesses features which are outstanding, which should be of great help in elucidating the causes of plague.

The measure of control in which we are particularly interested is that of reducing the rat population by means of "Cyanogas" fumigation, and employing only local native labour. From preliminary work done, the method has proved to be satisfactory in practice, and large areas covered in quite a short time. It is, however, necessary to employ a lorry if the work is to be enlarged so as to embrace other areas.

The native labourers do not employ masks, and they instinctively stand on the windward side, so that they run very little risk of getting any of the powder to their faces, and the fact that they are always in the open air reduces

the danger to a minimum. We have now obtained a satisfactory pump, which is light and easily handled by the native staff and we feel confident that this method is to prove of immense value in epidemic years.

After the method had been demonstrated to chiefs and headmen, the benefits conferred upon them by destruction of rats was realized to such an extent that our small fumigating staff could not cope with all the demands. This is one of the most pleasing results of our work, to find that wherever we have demonstrated the method the native population have clamoured for our services. However, as our effectiveness must be very limited owing to financial stringency, undue reliance must not be placed on fumigation alone, and efforts in temporary rat-proofing of grain stores must be our cheapest and most effective means for the present and the one we must advocate, as at present we can only deal with locations where actual outbreaks are taking place.

#### 8.—Fumigation.

During the year we have received a sufficient quantity for test purposes of the fumigant "Celophite Units". We have carried out tests in steamers and trains and feel very satisfied with the qualities of this new substance and have recommended its adoption to replace the old clay impregnated types. The new type which is a paper disc impregnated with liquid HCN has several advantages over the older methods.

We have always had a certain amount of trouble with impregnated clay types of fumigant owing to the swelling of tins in the hotter parts of the country, and particular care had to be exercised in opening them to prevent blowing out of the contents and damaging materials. Celophite overcomes this difficulty and even if it does blow out, no damage is done to fabrics or paintwork. Owing to the type of packing we have reduced expenditure considerably, as much as Sh. 3 per coach on the Kenya and Uganda Railways. Also, this method allows a much quicker fumigation of trains and steamers, so that the fumigator is not exposed for such long periods to the effects of the gas, always an important consideration in hotter places where a person perspires freely.

Also, preliminary experimental trials have been made with the dust fumigant "Cymag", manufactured by Imperial Chemical Industries, Ltd. The price of this substance is so very much lower than anything we have previously employed, that the cost of fumigation of an ordinary native hut will be reduced to about one-third per hut. The experimental trials have proved satisfactory and it is hoped that the employment of such a cheap fumigant will make it possible to extend our activities considerably during epidemic periods.

#### 9.—Jiggers.

(*Tunga penetrans*, L.)

The incidence of this flea in certain parts of the country can only be viewed with some alarm, owing to the severe crippling it causes among the native population. It appears to be most severe in the richer agricultural areas and generally associated with rich, red-loam soils. In certain districts a large number of lame natives are to be seen with splayed feet, entirely due to jiggers; but whether original infestations are so heavy or through neglect, these natives eventually arrive in hospitals and our returns of such, all chronic cases, run into a heavy total. Preliminary investigations have been started on this problem.

#### 10.—Tropical Typhus.

No work has been possible on this subject during the year. No cases occurred in the Nairobi area, and through lack of staff, we were unable to investigate outbreaks in other areas where the disease still occurs. We have investigated all premises reported to be tick infested and in each instance have found the cause of trouble to be due to neglect in ticking dogs. A report on the control and eradication of ticks in houses is being prepared for publication.

We desire to thank the Director and staff of the Imperial Institute of Entomology, Dr. Edwards of the British Museum, Professor Patton and Dr. Evans of the Liverpool School of Tropical Medicine, Professor Buxton of the London School of Hygiene and Tropical Medicine for help in a variety of ways.

## H.—SECTION OF BIOCHEMISTRY.

### 1.—Organization.

The work of the section was under the charge of Mr. H. M. Nefdt, B.Sc., from the 20th January until the 5th September during which period the Biochemist was absent on leave in Britain.

### 2.—Routine Work.

The number and nature of the routine examinations made during the year are indicated in the following table :—

#### (a) *Urines.*

General examination, i.e., determination of reaction, specific gravity, albumin and sugar, and microscopic examination of deposit	...	...	...	1,089
Sugar, qualitative and quantitative	...	...	...	29
Albumin, qualitative and quantitative	...	...	...	2
Deposit	...	...	...	5
Blood	...	...	...	4
Blood and pus	...	...	...	1
Bile	...	...	...	6
Acetone	...	...	...	1
Arsenic	...	...	...	1
Urea concentration tests	...	...	...	32

#### (b) *Faeces.*

Fat estimations, i.e., soaps, fats and free fatty acids...	17
Occult blood	16

#### (c) *Bloods.*

Sugar tolerance curves	23
Non-protein nitrogen	18
Urea nitrogen	19
Van den Bergh's test	2
Laevulose tolerance curve	1
Calcium	4

#### (d) *Gastric contents.*

Fractional test meals, i.e., total and free acidity estimations and qualitative tests for blood, bile and lactic acid	17
Blood and bile	1

#### (e) *Cerebro-spinal fluids.*

Globulin excess	16
Globulin and sugar estimation	1
Globulin and Lange gold curves	25

#### (f) *Urinary calculus*

Total	1,331
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The issue of metallic bismuth and bismuth oxide preparations for the treatment of yaws was continued, the numbers of doses being 168,160 and 5,100 respectively.

### 3.—Research Work.

Prior to his departure on leave the Biochemist completed the analyses of a series of eight-two vegetable foodstuffs on which estimations were made of moisture, nitrogen, fat, fibre, total ash, acid soluble ash, calcium, sodium, potassium, phosphorus and chlorine contents. The examination was also completed of a series of milk samples totalling forty-four, obtained from three native cows at fortnightly intervals throughout their lactation periods: on these, estimations were made of total solids, nitrogen, lactose, fat total ash, calcium, sodium, potassium, phosphorus and chlorine contents. These results are in process of preparation for publication.

Mr. Nefdt made estimations of the calcium, phosphorus, magnesium and carbonate contents of twenty samples of bones obtained from post-mortem examinations of normal (fatal accident) and pathological cases. There were kindly supplied by Dr. F. W. Vint, and the results will be prepared for publication in a technical journal.

Towards the end of the year an investigation was commenced in association with Dr. H. D. Tonking, Assistant Bacteriologist, on the composition of the blood of the East African native. This was part of a scheme suggested and discussed at the Inter-Territorial Medical Conference held at Entebbe in November, 1933. In a series of fifty-four normal individuals chosen from the Nairobi Prison population and the staff of native laboratory assistants, estimations of haemoglobin have been made by Sendroy's gasometric method, Sahli's and Talquist's colorimetric methods and Wong's colorimetric iron method. Simultaneous estimations have been made of red cell diameter by Eve's halometer, red cell count, and red cell volume. This work will be extended prior to the publication of results.

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**APPENDIX.**  
**RESUME OF WORK CARRIED OUT BY THE CLINICAL LABORATORY**  
**ATTACHED TO THE NATIVE HOSPITAL, MOMBASA,**  
**DURING THE YEAR 1934.**

**1.—Staff.**

*European.*—Mr. W. L. Titman was in charge until June, 1934, when he proceeded to England on long leave, being relieved by Mr. T. G. R. Jones.

*African.*—Two trained African laboratory assistants.

**2.—Examinations.**

During the year, 14,656 specimens were received and dealt with in the Laboratory, an increase of 1,881 specimens over the previous year.

The sum of Sh. 1,490 was collected on account of examinations performed for medical practitioners engaged in private practice.

A detailed account of the work carried out is as follows :—

**3.—Blood Examinations.**

<i>Microscopical examinations (parasites, counts, etc.)</i> ...	...	4,849
(a) Negative ...	...	3,596
(b) <i>P. falciparum</i> including 24 crescents ...	...	1,196
(c) <i>P. malariae</i> ...	...	23
(d) <i>P. vivax</i> ...	...	14
(e) Mixed infections ...	...	9
(f) <i>S. rossi</i> ...	...	4
(g) <i>Microfilaria</i> , unsheathed ...	...	10
(h) <i>Microfilaria</i> , sheathed ...	...	10
(i) Total counts ...	...	24
(j) Differential counts ...	...	125

**4.—Faeces Examinations.**

Five thousand six hundred and forty-one specimens of faeces were examined for helminths or protozoa.

The number of specimens in which *E. histolytica* has been identified has fallen somewhat but other infections have increased approximately in proportion with total number examined as the following figures will show :—

Negatives ...	...	1,478
<i>Ancylostoma duodenale</i> ...	...	1,662
<i>Trichuris trichiura</i> ...	...	1,637
<i>Ascaris lumbricoides</i> ...	...	979
<i>Taenia</i> ...	...	316
<i>Strongyloides stercoralis</i> ...	...	137
<i>Schistosomum mansoni</i> ...	...	75
<i>Schistosomum haematobium</i> ...	...	6
<i>Oxyuris vermicularis</i> ...	...	31
<i>Hymenolepis nana</i> ...	...	3
<i>Entamoeba coli</i> ...	...	1,025
<i>Entamoeba histolytica</i> ...	...	280
<i>Giardia intestinalis</i> ...	...	504
<i>Iodamoeba butschlii</i> ...	...	43
Flagellates (undifferentiated) ...	...	801

## 5.—Serological Examinations.

(a) Widal's test was carried out on 129 samples of serum, taking as standard, agglutination in a solution of 1 in 50 or higher, using Dreyer's technique, with the following results :—

Negative	...	...	...	...	...	69
<i>B. typhosus</i> alone	...	...	...	...	...	32
<i>B. paratyphosus</i> "A" alone	...	...	...	...	...	1
<i>B. paratyphosus</i> "B" alone	...	...	...	...	...	8
Group agglutinations	...	...	...	...	...	19

In addition, two specimens were put up for *Br. abortus* but proved negative, one specimen was sent to Nairobi for *Br. melitensis*, *paramelitensis*, as there were no agglutinable cultures here, and one serum was forwarded for *Weil-Felix* for the same reason.

(b) Two hundred and thirty-one specimens of blood were received, the sera pipetted off and forwarded to Nairobi for Wassermann, Kahn or Sigma tests.

(c) Nine blood group tests were made.

## 6.—Bacteriological Examinations.

One hundred and forty-three specimens for cultural examination were received and dealt with. Some requiring further examination or vaccine preparation were forwarded to Nairobi.

Faeces cultures	...	...	...	...	...	29
Urine cultures	...	...	...	...	...	55
Blood cultures	...	...	...	...	...	5
Throat swabs (K.L.B.)	...	...	...	...	...	13
Miscellaneous cultures	...	...	...	...	...	1

## 7.—Microscopical Examinations.

(a) *Gonorrhoea*.—Two hundred and twenty-eight specimens of urethral smear were examined and 140 of these showed the presence of *Neisseria gonorrhoea*.

(b) *Lymph from chancres*.—Fifty-seven specimens were examined. *T. pallida* was identified in seventeen.

(c) *Leprosy*.—Seven nasal smears were examined and *B. leprae* identified in one.

(d) *Sputum*.—Four hundred and seventy-eight specimens were examined for the presence of the tubercle bacillus and 127 proved positive. Six of the foregoing were also stained by Gram's method for the identification of other organisms, and two further specimens were examined for the presence of *E. histolytica*, one proving positive.

(e) *Plague*.—Six hundred and ninety-four smears from rats either trapped or found dead were examined for *B. pestis* and all proved negative.

(f) *Cerebro-spinal fluid*.—Five specimens were received and cell counts were carried out on each.

(g) *Anthrax*.—Six exudates were examined for *B. anthracis* and three proved positive.

(h) *Miscellaneous smears, tests, etc.*—Sixty-one specimens from various sources were received for miscellaneous examinations, tests, etc.

**8.—Urines.**

Two thousand three hundred and ninety specimens of urine were received and examined as follows :—

General examination	...	...	...	...	2,351
For <i>N. gonorrhoea</i> , negative	...	...	...	...	34
„ <i>N. gonorrhoea</i> , positive	...	...	...	...	3
„ <i>B. tuberculosis</i> , negative	...	...	...	...	1
„ urea concentration test	...	...	...	...	1

*Schistosoma haematobium* was found in 148 specimens.

**9.—Water Analysis.**

Two bacteriological examinations of water were performed on the Mombasa water supply.

The preliminary results of these together with sub-cultures were forwarded to Nairobi where examinations were completed.

**10.—Pathological Specimens.**

Twenty-seven specimens were forwarded to Nairobi for histological examination.

**11.—Miscellaneous—Sent to Nairobi.**

(a) Cultures for vaccine preparation	...	...	...	29
(b) Protein free filtrates for non-protein nitrogen	...	...	...	2
(c) Blood filtrates for sugar tolerance	...	...	...	2
(d) Blood filtrate for sugar estimation...	...	...	...	1
(e) Stomach contents for evidence of poison	...	...	...	1

**12.—Post-mortems.**

Sixteen post-mortems were performed up to the month of June, 1934, but after Mr. W. L. Titman departed on long leave no more examinations of this kind were carried out by the Laboratory staff.

The cause of death in the post-mortems performed were as follows :—

Tuberculosis, abdominal	...	...	...	...	1
Schistosomiasis	...	...	...	...	1
Perforation of stomach	...	...	...	...	1
Aneurism, abdominal	...	...	...	...	1
Pneumonia	...	...	...	...	4

**Violence—**

External haemorrhage (due to blow from rungu)	...	...	...	1
Cerebral haemorrhage (due to blow)	...	...	...	1
Perforation of intestine (due to stab)	...	...	...	1

**Accident—**

Rupture of lung and spleen	...	...	...	1
Wounds to lung, and haemorrhage	...	...	...	1

Revised 10-11-11

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